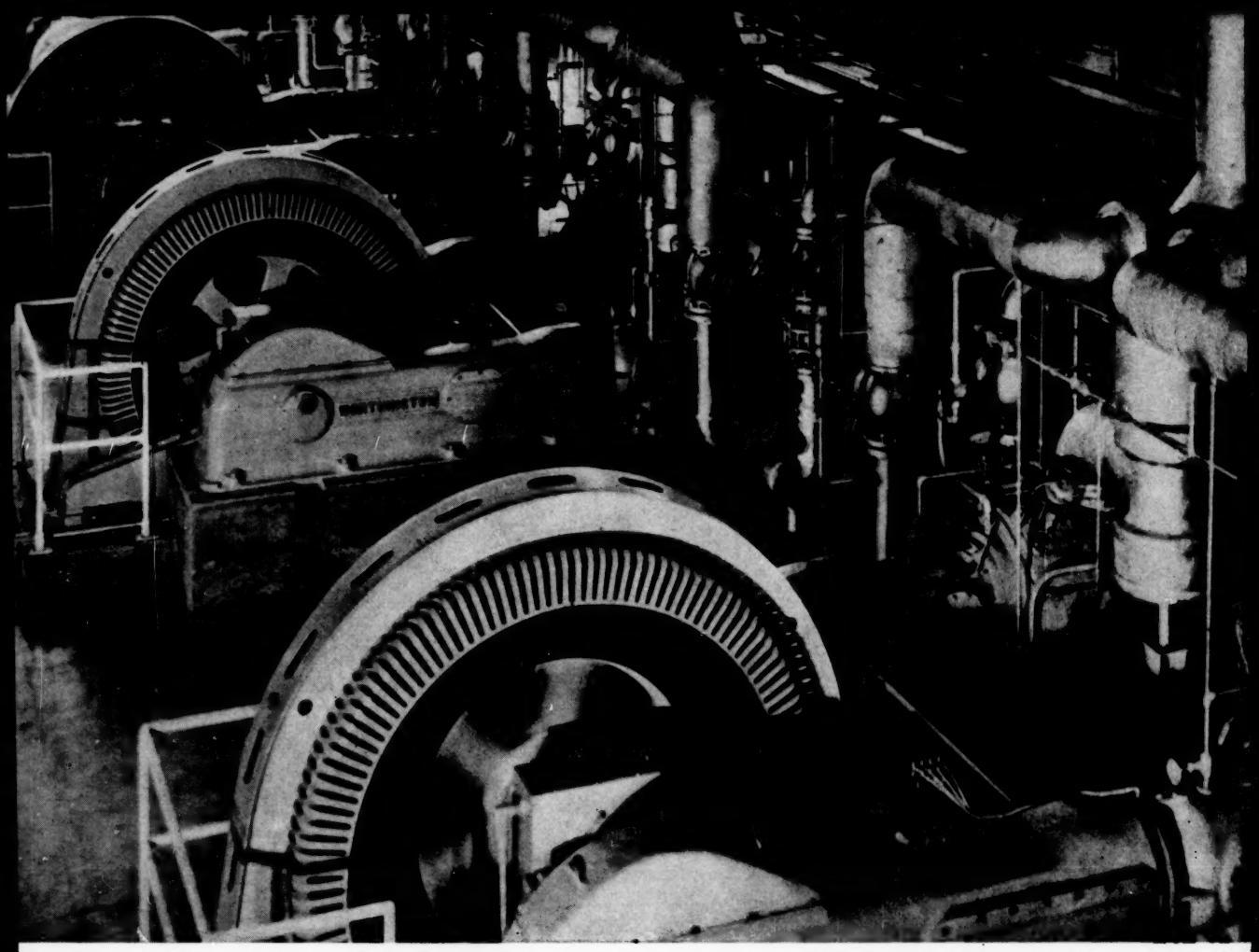
# INDUSTRIAL REFRIGERATION

Sept., 1958

Vol. 135 No. 3



# Help your compressor give what its maker promised: CLEAN, DEPENDABLE PERFORMANCE

**Use the compressor oil that almost every manufacturer recommends—*Texaco Capella Oil Waxfree.***

No matter what the refrigerant, Texaco Capella Oil Waxfree assures clean compressor performance. For example, even at temperatures as low as minus 100°F., waxout does not occur in systems where a miscible-in-oil refrigerant, such as one of the Freons, is used.

Texaco Capella Oil Waxfree has exceptionally low haze and floc temperatures. It has extra stability and a high resistance to oxidation. It is moisture-free, won't foam and is compatible with all refrigerants.

Texaco Capella Oil Waxfree is *designed* to assure clean, dependable compressor performance.

There is a complete line of Texaco Capella Oils Waxfree—all shipped in refinery-sealed containers to protect purity and quality.

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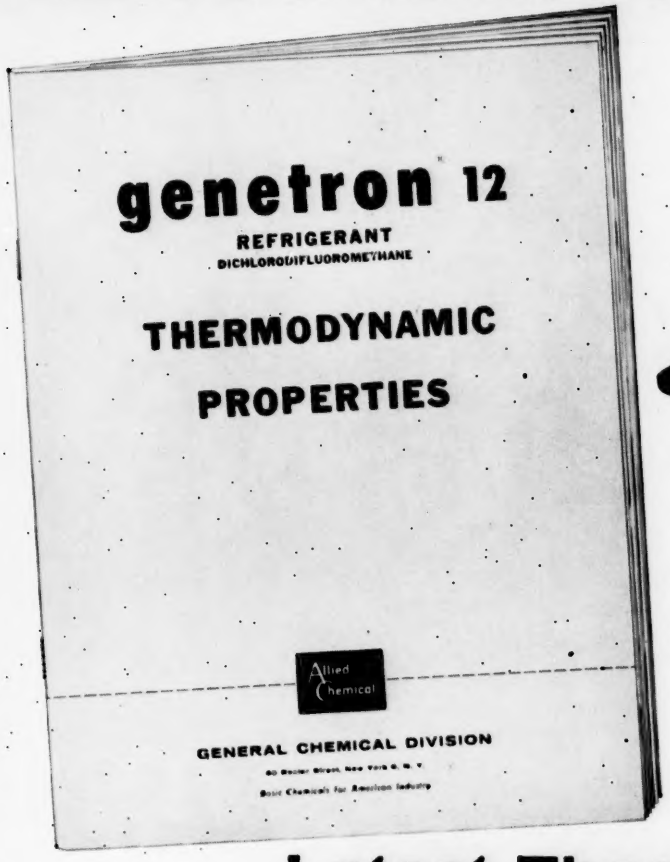
The Texas Company, 135 East 42nd Street, New York 17, New York.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

# NEW! *from General Chemical research...*




***Here are essential new data for every refrigeration engineer—on dichlorodifluoromethane, the most widely used fluorinated hydrocarbon refrigerant.***

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**Dichlorodifluoromethane**

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**WRITE TODAY** (on business letterhead, please) for these important tables. We will be glad to send you free copies.

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SUPER-DRY REFRIGERANTS

Allied Chemical

**GENERAL CHEMICAL DIVISION**
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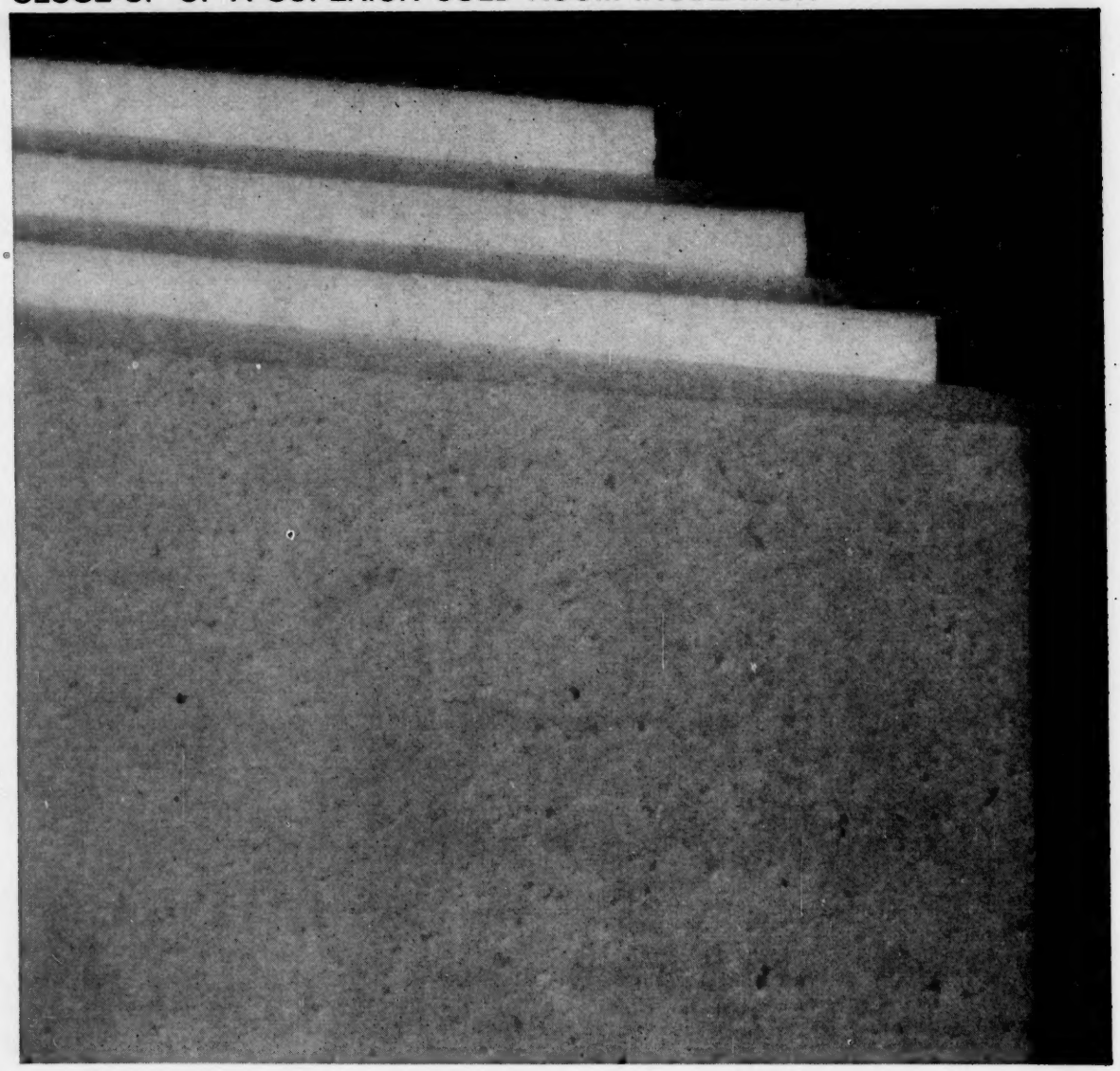
CLOSE-UP OF A SUPERIOR COLD ROOM INSULATION



# Announcing: new Armstrong S-E Armalite

## a self-extinguishing, foamed plastic insulation for cold rooms

Armstrong S-E Armalite is a completely new cold room insulation that furnishes extra protection against fire hazards. It fully meets ASTM Test D-635-56-T requirements for self-extinguishing plastics. This superior type material is made from tiny, foamed plastic beads infused with a special chemical to make them fire retardant. The beads are then expanded and molded with heat and pressure into strong, resilient boards.

The closed cell structure of S-E Armalite is unusually efficient, with a low k-factor of 0.24 at 60° F. mean temperature. During installation, resilient S-E Armalite "gives" under pressure to assure heat-tight joints. Excellent stability at low temperatures keeps joints in service. Other advantages include light weight, high strength, good moisture resistance . . . all at low cost.

**These are just the highlights.** For full details on this remarkable new cold room insulation, send today for free folder. Write Armstrong Cork Company, 2109 Skye Drive, Lancaster, Pennsylvania.

**Armstrong INSULATIONS**

September, 1958

Number 3

Vol. 135

# Industrial Refrigeration

*Now in its 67th Year of Publication*

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**Diversified Services by Public Warehouses** ..... 15
Edsicles emphasizes the fact that public refrigerated warehouses can fulfill a number of industry requirements for low temperature processing and storage, other than the usual application to food preservation.

**Detroit Developers Open Second Center** ..... 16
Utility refrigeration is industrial refrigeration. Several years ago, J. L. Hudson Company, Detroit, sponsored a one-stop suburban shopping center in which, among other services, it provided chilled water for air conditioning and commercial refrigeration condensing services. Success of the venture is confirmed by the fact that a second center has been completed and is now in operation. Refrigeration is invoiced to tenants in therms.

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**The Cover:**

**Building engineers in new Reynolds Metals Co. general office building have finger-tip control over heating and air-conditioning through one of the largest and most comprehensive central control systems—a "Supervisory Datacenter" developed by Minneapolis-Honeywell. Panels are faced with aluminum.**

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General Offices: 433 N. Waller Ave., Chicago 44, Ill. Teles.: AUstin 7-1303-04-05

# news briefs of the month

**NARW Names Powell To Succeed Dalton**

Appointed Executive Vice-President, NARW, is Richard M. Powell, according to the Association President, Philip G. Kuehn. Powell, who has been Managing Director of the National Institute of Rug Cleaning since 1950, will take over his new duties on October 1. He succeeds William Dalton. During World War II, Lt. Col. Powell served in the Air Force. A native of St. Paul, he is a graduate of Carleton College, married, and has two children.

**Maclinn Succeeds Diehl**

Effective September 1, Dr. Walter A. Maclinn, formerly Chairman, Food Science Department, Agricultural Experiment Station, Rutgers University, in Brunswick, N. J., becomes Director of The Refrigeration Research Foundation, Colorado Springs, Colo. Dr. H. C. "Dutch" Diehl, Director of the Foundation since its incorporation, has retired. A graduate of University of Massachusetts, with his PhD in 1938, Dr. Maclinn was a professor there for seven years before joining the Rutgers staff in 1946.

**Air Conditioning Exposition**

Expansion of the 14th International Heating and Air Conditioning Exposition has been brought about by space reservations of more than 450 leading manufacturers. To be held January 26 to 29 at Convention Hall, Philadelphia, the display has become larger than the last held in that city in 1955. ASHAE will hold its 64th Annual Meeting concurrently.

**Central Refrigeration Plant For Los Angeles County**

Official opening of Los Angeles County Central Heating and Refrigeration plant at the Civic Center took place on August 21. The first of its kind in the nation, this complex system which will carry heat and refrigeration to various county buildings, was built and financed by the Los Angeles County Employees Retirement Association. The county will pay an annual rental.

**Railroad Reefers**

Over one-tenth of the new railroad cars delivered in July were refrigerated equipment. Although no new cars were ordered in July, 245 were delivered and there remains on order undelivered another 1,022. This announcement came from the Association of American Railroads and the American Railway Car Institute. It was noted that deliveries for July were down 10 percent from those in June and less than 30 percent of a year ago.

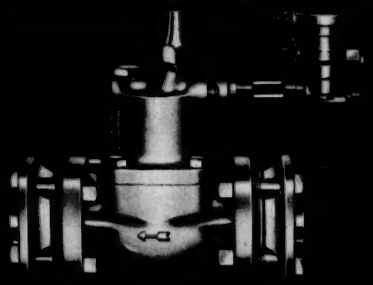
**Continental Freezers of Ill. Takes Lafayette, Ind. Plant**

Organization of Lafayette Refrigerated Services, Inc., Lafayette, Indiana, is announced by Kenneth F. Stepleton, President of Continental Freezers of Illinois, Inc., Chicago. The new company acquired a warehouse formerly occupied by Continental Freezers, Inc. of Lafayette, (Ind.) owned by Lafayette Foods, Inc., which has discontinued business.

The warehouse, with 632,000 cubic feet of freezer space has been owned by the Central Manufacturing District of Chicago, and has been leased to Lafayette Foods, Inc. CMD has also purchased a frozen food manufacturing plant adjoining the Lafayette refrigerated warehouse, and has leased it on a long-term contract to Holloway House, Inc.

**Low Temperature Gasoline**

Refrigeration played an important role in making possible an extra 27 gallons of gasoline for the record breaking flight of Capt. Marion "Pat" Boling from the Philippines to Boise, Idaho. Even with extra fuel provisions the plane would have carried less than 400 gallons of gasoline. By chilling the fuel to 8 F, contraction provided the additional 27 gals.

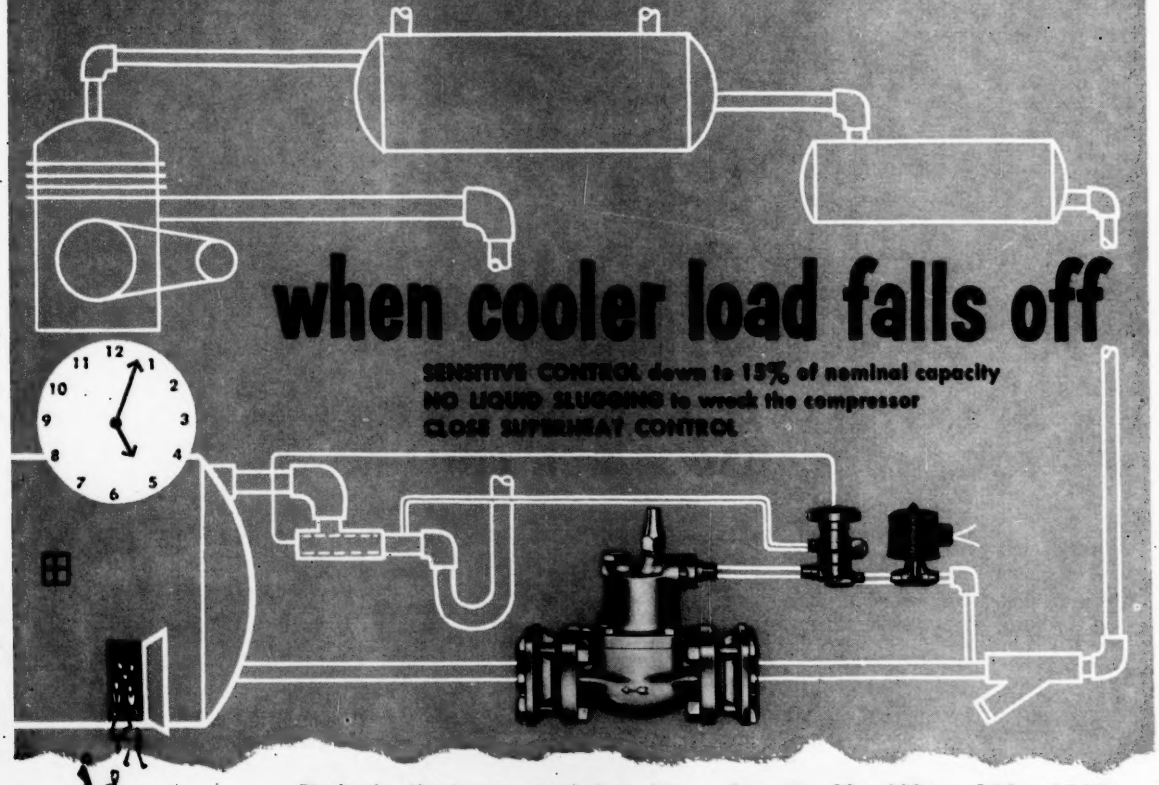


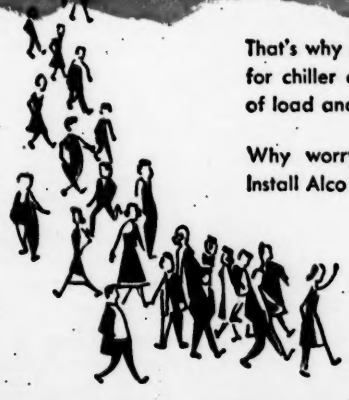
Alco's **PO valve**

**maintains control**

**when cooler load falls off**

**SENSITIVE CONTROL down to 15% of nominal capacity**
**NO LIQUID SLUGGING to wreck the compressor**
**CLOSE SUPERHEAT CONTROL**





That's why Alco is recommended so often for chiller applications with wide ranges of load and capacity.

Why worry about compressor failure? Install Alco and relax!

Capacities: 20 to 200 tons, F-12 and F-22

**Buy Alco . . .**
**The System Shows the Difference**

Write for Bulletin No. 189-57

**The one complete line of refrigerant controls that insures product quality:** Thermostatic Expansion Valves, Refrigerant Distributors, Solenoid Valves, Suction Line Regulators, Flooded Evaporator Controls, and Reversing Valves.

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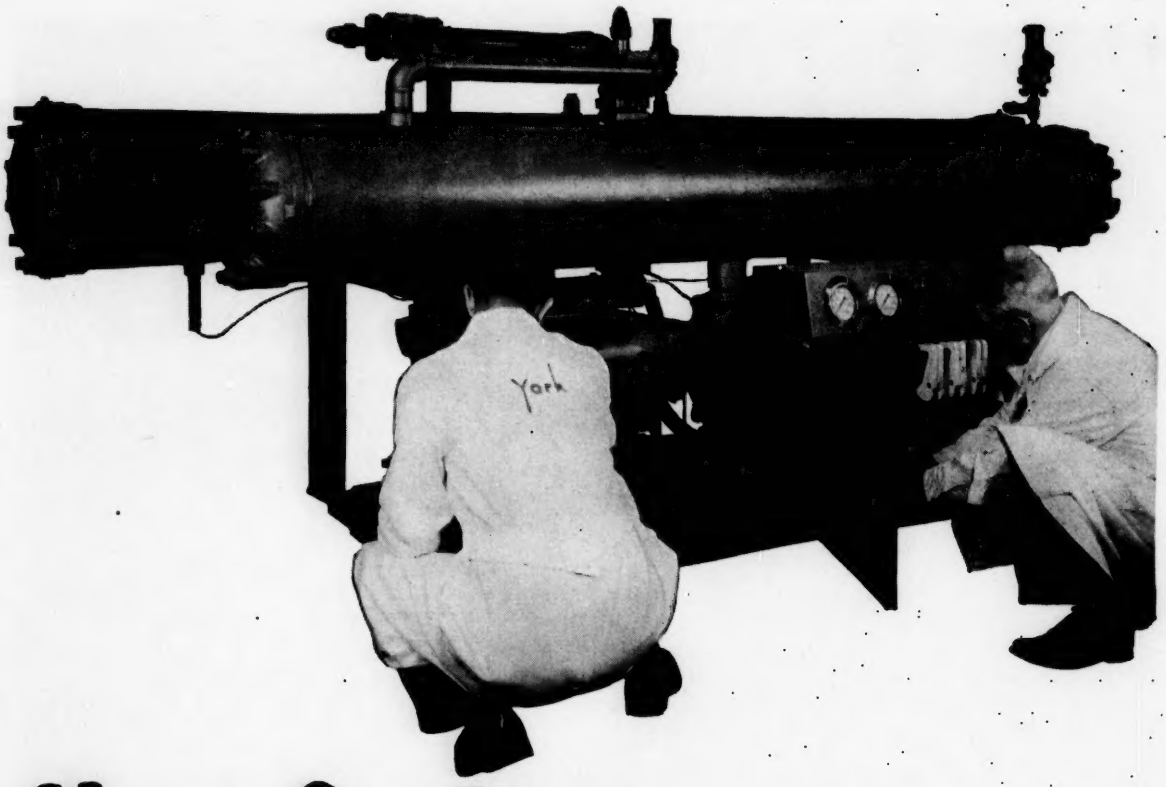
**SEE YOUR ALCO WHOLESALER**




# More Cooling

## IN 20% LESS FLOOR SPACE WITH YORK PACKAGED WATER CHILLER!

### Compact, Factory-Assembled Unit Installs Anywhere In The Building—Without Costly Installation!

York Packaged Water Chillers offer consultants, architects and building managements the first practical answer to the critical space/cost problems in air conditioning new buildings. Each complete, factory-assembled package features integrated arrangement of all components—with built-in assurances of substantially reduced operating and maintenance costs!

Exclusive Flooded Coolers and positive refrigerant feed control mean top efficiency over the entire range of load conditions. Automatic capacity controls save power by continuously adjusting output to prevailing load conditions. Exclusive capillary oil return assures uninterrupted oil flow under light loads! All this, in a line that has the broadest range of capacities in the industry —from 18 to 250 tons! All this, in whisper-quiet, vibration-free, lightweight units that require no special foundations or space-consuming structural supports!

For *all* the facts and figures, see your local YORK sales representative...or write York Corporation, York, Pennsylvania, for Catalog EM-213!

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*IN CANADA—SHIPLEY COMPANY OF CANADA, LIMITED*

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**Millions Live Better With YORK... the quality name in air conditioning**

Manufacturers of Residential and Commercial Heating and Cooling Systems • Air Conditioning and Refrigeration Equipment for Industrial and Commercial Installations • Room Air Conditioners • Ice Makers • Refrigeration Units and Systems

# What's New

MACHINERY
APPLIANCES • PROCESSES

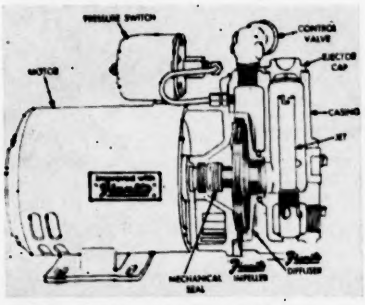
## Many Improved Auxiliaries, Flow Controls Instruments and Test Equipment Offered

▶▶▶ ADVANCED industrial refrigeration equipment has been paced by introduction of new and improved auxiliaries for such operating plants. Boosters, air and vacuum pumps for control systems, centrifugal pumps, control valves, pipe fittings, controls and instruments, all embracing new concepts or advance designs have been introduced as rapidly as the innovations within the components of the refrigerating system.

### Barrel Type Compressors

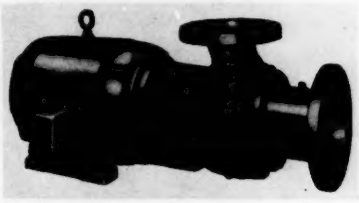
▶ A MILWAUKEE FIRM recently introduced an extended compressor line with the development of a single-stage centrifugal compressor built in a barrel-type casing. The new unit can operate at a working pressure up to 500 psia. By contrast, conventional single-stage boosters have a maximum working pressure of approximately 50 psia. The unit is aimed primarily at petroleum and chemical industries.

### Thermo-Setting Pump Parts



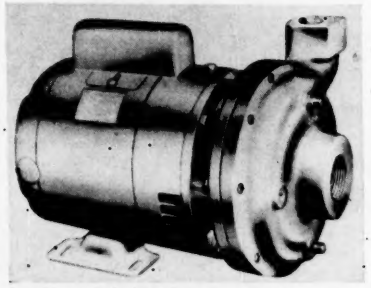

▶ AN OHIO MANUFACTURER announced recently that its research and development division had completed work on a project involving thermo-setting materials as an alternate for certain ferrous and non-ferrous metal parts in the pumps they manufacture. Called "Fianite", certain models of the firm's line of pumps and water systems are now being equipped with impellers and diffusers of this material. Said to resist chemical action the material is immune to rust and corrsion, and is claimed to neutralize any electrolytic or galvanic action. It is light weight, weighing one-fourth as much as cast iron and one-fifth the weight of bronze. Pump weight is reduced considerably, efficiencies are retained longer and pump longevity increases.

### End-suction Centrifugals



▶ SUITABLE for circulating, coolant, or cooling tower applications is a new end-suction type general purpose centrifugal pump by a well known Northwestern Illinois firm. Pumps are close-coupled, and either flange or base mounted in vertical position and pedestal mounted for horizontal units. The range of sizes is from ¼ to 40 hp at 3500 rpm; ¼ to 20 hp at 1750 rpm. They possess low NPSH characteristics to meet critical suction conditions. Features include change-over from packing to seals through interchangeable inserts, including fluid cooled stuffing boxes.

### Dunham-Bush Adds Pump Line



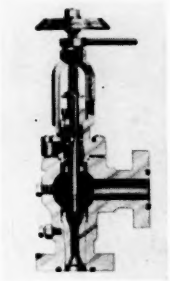
▶ NEWEST addition to Dunham-Bush line of products is a centrifugal of the volute type for a horizontal or vertical installation. It is used as a circulator for hot water and/or chilled water in air conditioning systems; can also be used in cooling tower or evaporative condenser systems; 13 sizes available to 150 gpm. Meeting NEMA Standards, the electrical system includes dual voltage hook-up, being serviceable either at 115/230 single phase, or 208/220/440 three-phase. Construction details feature cast iron case and head, brass impeller with rotary type shaft seal.

### Oil-Less Rotary Pump

▶ INCORPORATING a rotary shaft seal which prevents leakage of air into the pump, and also prevents leakage of the medium being pumped to atmosphere, a Newark firm has redesigned their oil-less rotary air and vacuum pumps. Improvement permits use of the pump for any operation where the medium cannot be contaminated by oil or mixed with the atmosphere, such as instrument controls, food handling equipment, and textile processing. Volume ranges from 2 to 12 cfm with vacuums to 20 in. mercury, or pressures to 15 psig.

### Metering Valve

▶ LARGE, HIGH PRESSURE throttling valves for general industrial use are now being manufactured by a pioneer oil-tool firm. Available in ASA or API flanged or threaded connections,

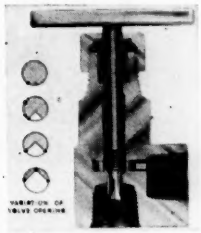


this valve is made in carbon steel, stainless steel, bronze or aluminum, in sizes 1 to 6 in. and pressure ratings to 10,000 psi. Stem may be locked at any setting.

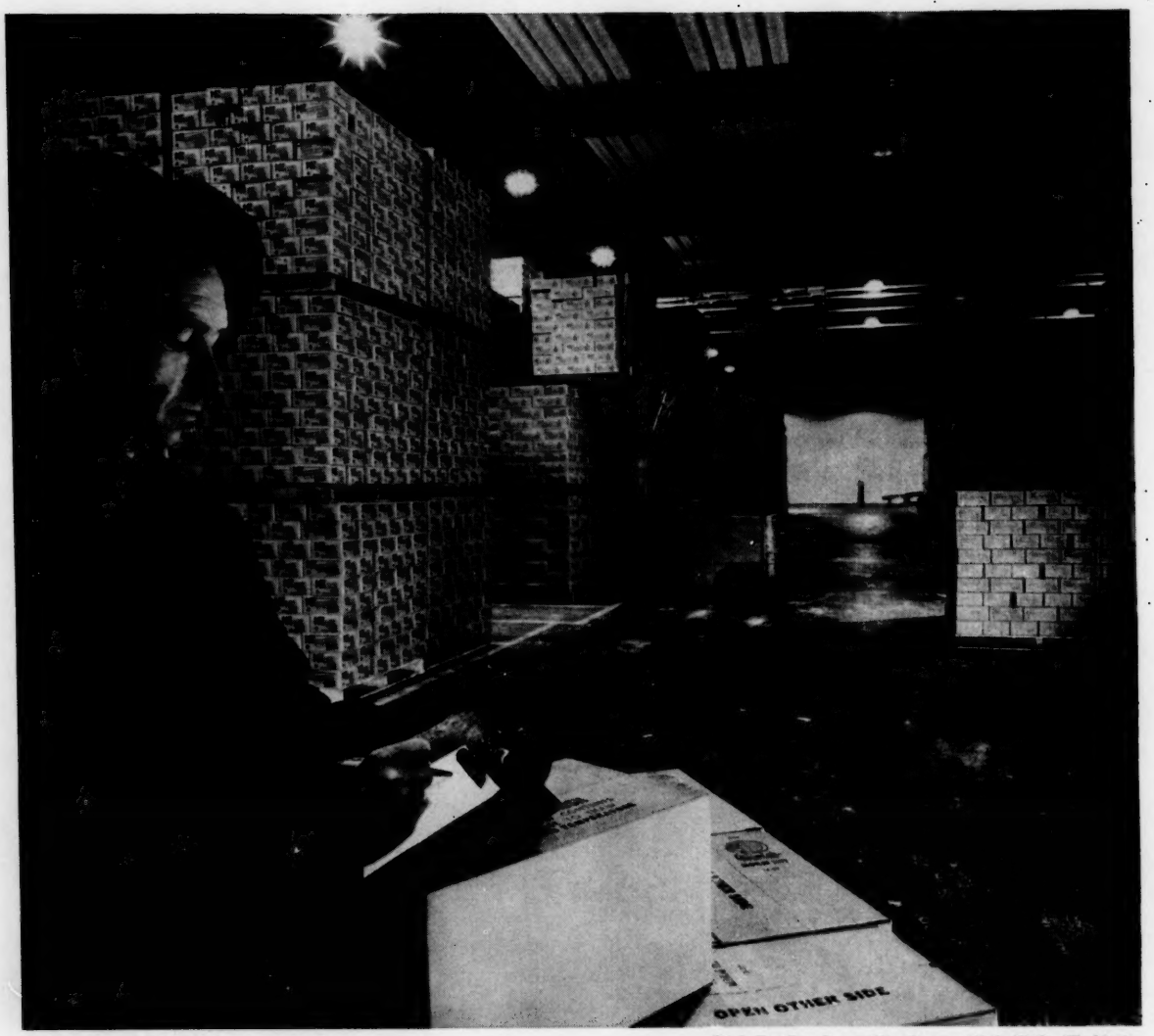
A pointer and calibration plate indicate the amount of orifice opening. Tapered throat gives a venturi tube effect with excellent flow characteristics. Interchangeable tips are manufactured including conical and thermo tips.

### Tapered Orifice Valve

▶ ANOTHER CALIFORNIA valve firm introduced their "Veegroo" tapered orifice valve for essentially the same purposes as the throttling control mentioned above. Function of the second valve is



basically that of a needle valve, except that the flow area is in triangular section instead of an annular ring. Advantage claimed is clog-proofing. This valve, however, is manufactured in all standard sizes to one-inch. At presure ratings of 3,000 to 10,000 psi, it is available in a variety of bar stock metals. The valve has been used in the petroleum chemical, food machinery, brewing, dairy, and plastic industries.




*Birds Eye Zero-Storage Warehouse at Walla Walla, Washington*

# Styrofoam® cuts installation costs 10% at Birds Eye

After careful study, Styrofoam was chosen to insulate the floors, ceilings and walls of a zero-storage warehouse for Birds Eye Division of General Foods.

Over 500,000 board feet of Styrofoam were used. The choice of this insulation material resulted in a 10% savings in installation costs and, thus far, the complete absence of any vapor problems. Tests conducted by Birds Eye revealed that Styrofoam will preserve their food products for 48 hours after the ammonia has stopped circulating and that Styrofoam will insulate the ground from freezing for four to six weeks after the subfloor heating is turned off.

This is just one example of the many cold storage applications in which Styrofoam has provided economical and effective insulation. Because it has low heat transmission and unyielding resistance to moisture, Styrofoam has permanent insulation efficiency. Because it is lightweight, self-supporting and flexible, it offers advantages in handling and installation. This was demonstrated at Birds Eye by the fact that Styrofoam was readily contoured to the curvature of the roof.

For more information about Styrofoam* (a Dow plastic foam), contact the nearest Styrofoam distributor, or write to us. THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1909L-1.

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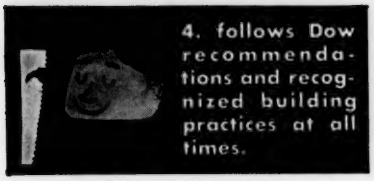
YOU CAN DEPEND ON DOW

**Sign of an outstanding insulation contractor**

Look for this seal when you build cold storage facilities. It's your assurance that the firm displaying it is competent and fully qualified to install Styrofoam*. This seal means the contractor . . .




For the names of Approved STYROFOAM Insulation Contractors in your area, write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1903D.

**STYROFOAM**

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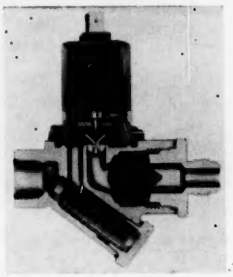
DOW


# WHAT'S NEW, *Continued*

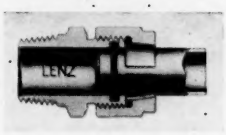
## Water Flow Valve

▶ ESPECIALLY DESIGNED for controlling smaller amounts of water flow, such as individual compressor packet, water make-up to smaller towers and evaporative condensers, etc., the "Marfaid" valve has just been introduced. Overall length is 3 inches, height just over 4 inches. Maximum flow rates are provided by the action of the special diaphragm; equipped with protective strainer.



## Tube Fitting Without Flares or Ferrules

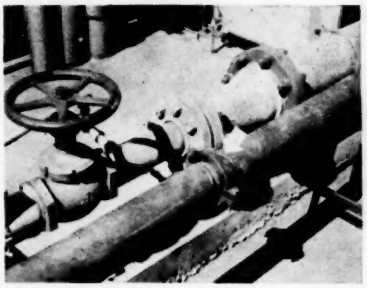
▶ WITHOUT metal to metal seal, is the theory of an O-ring fitting developed by a Dayton, Ohio firm. Used on vacuum, air and hydraulic systems the fitting seals by means of a standard stock O-ring. Its split tapered sleeve holds the tubing in place while the clamping nut is drawn up. The higher the pressure the greater the grip of the tubing and the greater the seal of the O-ring. Available in a full range of shapes, connectors, unions, elbows and tees, bulk-head connections and a number of finishes, the new fitting sizes range from ⅛ to 2 inches.




## Canadian Cold Plates

▶ HEAD of several small dairies and a creamery in Nova Scotia recently developed a 24x15x2½ in. eutectic plate for use in holding frozen commodities at minus 6 F. Portable, the eutectic plate is now being marketed for approximately $16.00 by this Canadian business man. A Boston firm, it is reported by the Nova Scotian's advertising agency, is prepared to manufacture the plates for U.S. market. So far merchandising has been limited to Canada with 400 units sold in nine provinces on introduction.

## Pipe and Tube Joint



▶ CONNECTING pipe or tubing of dissimilar metals which may be subjected to extreme temperatures and pressures, has a practical solution in the Marman Conoseal joint. Manufactured by a Jackson, Michigan firm, the device is designed to maintain leakproof seal from minus 300 to 1800 F for the most adverse operating conditions in the chemical and oil industries. The joint lends itself to installation where working quarters are tight, requiring only two bolts to put it together or take it apart. It takes up less space than conventional flange joints.

## Packaged Alloy Fittings

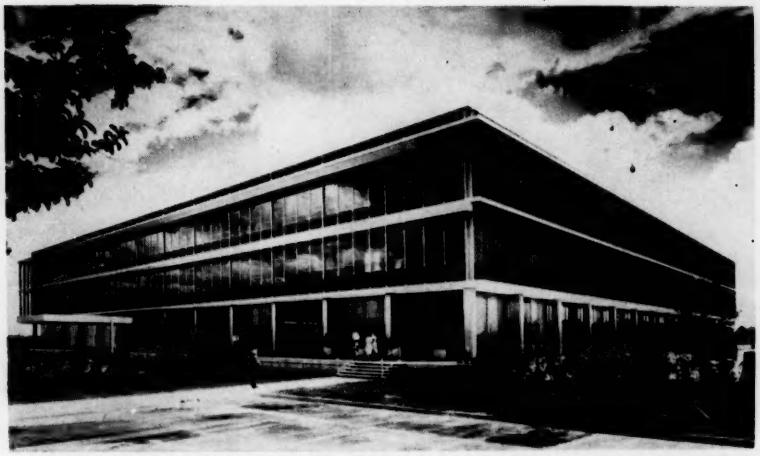
▶ CONTAINERS, important to industries employing industrial refrigeration such as in beverages, frozen foods, milk products, etc., have now been introduced in the fitting field. A Louisville, Kentucky firm is pioneering a program of individual packaging to safeguard the top quality of each one of its stainless steel non-ferrous welding fittings for industrial piping. Fittings up to and including 12-inch and flanges to 8-inch will be individually packed.

The new program covers fittings and flanges of 25 metals and alloys. Theories behind the packaging include protection of carefully forged fittings and flanges with machined bevels, lands and gasket surfaces, from scars and dents inflicted in transit or in storage. Further, the plan simplifies identification.

**(Continued on Page 37)**

*Air Conditioning*

# Aluminum Showcase



General office building Reynolds Aluminum Company, Richmond, Va., opened September 1, is a showcase of the many uses in modern architecture and refrigeration engineering. Vertical sun louvers pictured at right are made of aluminum to reduce the refrigeration load considerably.

## Reflective Louvers Are Load Preventives

▶▶▶ MULT-MILLION dollar aluminum showcase is a description which can be applied to the new Richmond, Virginia home of the Reynolds Metal Company. Designed by Skidmore, Owings and Merrill of New York, the building contains 1,235,000 pounds of aluminum, used in many ways for economy, efficiency or beauty, according to chief designer Gordon Bunshaft. Aluminum uses include the world's largest system of automatic sun louvers, movable office partitions, acoustical and light diffusing ceilings, a new line of aluminum office furniture, aluminum yarn draperies and carpeting, and most of the hardware.

Square-shaped, the four-level structure is capable of housing 1,000 employees, contains 300,000 square feet of usable floor space and dominates 160 acres of rolling Virginia countryside. Costing $11½ million dollars, excluding the land and improvements, the building construction was under the engineering supervision of Ebasco Services, Inc., and George A. Fuller Company was general contractor. Upon completion the project was sold to Metropolitan Life Insurance Company, which leased it back to Reynolds on a long-term basis.

### Louvers Reduce A/C Load

A system of 880 giant color-anodized aluminum sun louvers, each 14 feet high and 22 inches wide, shield the eastern and western faces of the building from heat and glare, and reduce air conditioning load. The louvers are geared to an astronomical clock which will anticipate the movements of the sun through the year 2100 A.D.

Completely air conditioned the building employs a low pressure air distribution system (300,000 cu. ft. per min. capacity), which includes electrostatic filters, cooling coils, system reheat coils, and booster coils for varying load requirements. The main air conditioning system is supplemented by two package air conditioning units to accommodate special zoning requirements in the training area on the lower level and health area in the penthouse. Both package units have their own individual duct system, and are furnished steam and chilled water from the main plant.

The main air conditioning system and ventilation equipment for the building is located on the east side of the lower level and is composed of 10 separate fan systems with maximum fresh air and minimum fresh air dampers, return air dampers, face dampers and bypass dampers. Each has heating coils and chill water coils. All units are controlled with pneumatic and electric controls which are centralized at a Supervisory Data Center.

Thermostats are located in the offices on the lower and first levels, and in the return ducts above the Hexcel ceiling on the second and third level, except for certain private offices which are individually controlled. The fan room acts as a common plenum of all 10 units and air is returned through ducts by means of pressure differential.

### Central Station System

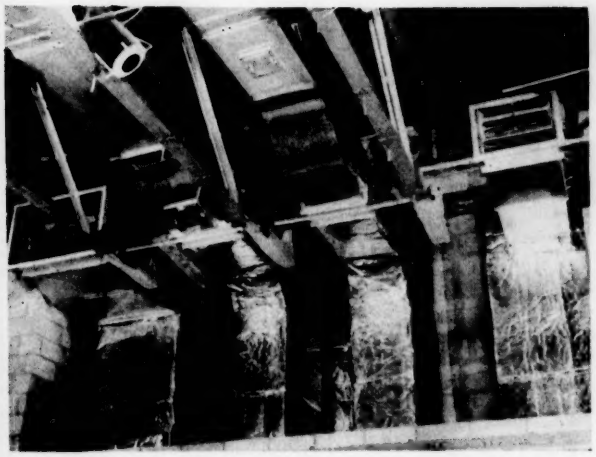
Two 600-ton York centrifugal compressors and condensers are also controlled at the data center. The condenser water is recooled by a 2-cell Marley spray cooling tower located at the west side of the property.

### Air Control Critical

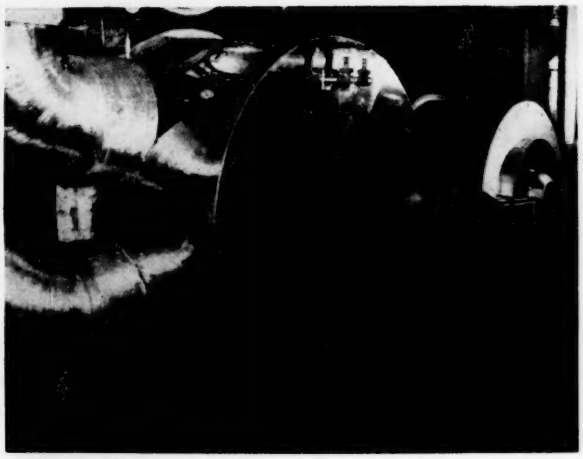
Inasmuch as the building is totally enclosed with fixed glass panels, the reliability and efficiency of the heating, ventilating and air conditioning system is centered in a control room (Supervisory Data Center) in the lower level, from which the building engineer can start or stop any piece of equipment, check on its performance, determine the temperature, humidity, and pressure at various points throughout the building, and maintain a close watch on all phases of the operation.

### Sun Louver Operation

The sun louvers serve a very real purpose in air conditioning by effectively intercepting the heat of the sun outside of the building rather than inside, as is the usual case with venetian blinds or other interior louvers. By protecting the glass walls



Aluminum ducts convey conditioned air to points of use. Insulation is also jacketed with aluminum. Ducts are sound proof to maintain a low level of equipment noise, as well as insulated to prevent condensation.



Watch engineer is reflected in the removable aluminum cover used to protect the insulation on the heads of the water chillers in the central station air conditioning system. Aluminum is applied to pipe covering as well.

# New Reynolds Building Uses Only 1200TR

from the rays of the sun and providing proper ventilation between the louvers and the glass, the heat load is substantially reduced on the critical east-west exposure.

Largest sun louver installation in the world (total area: 21,355 square feet), the system is operated by two 7½-hp and two 5 hp motors, and is governed by a complex control system made and installed by Lemlar Manufacturing Co., Gardena, Calif. The louvers change position several times during the day. Their rotation is only slightly in advance of the sun's movement so that minimum restrictions are placed on view and entering daylight.

Seasonal changes in sun angles require periodic corrections in the daily program of louver movements. These corrections are made automatically by a master clock so that the louver operation is automatic the year around. Barring power failure, this master clock will keep the control system properly adjusted.

### Supervisory Center

Building engineers have finger-tip control over heating and air conditioning in the new Reynolds building, achieved through a Supervisory Data-Center developed by Minneapolis-Honeywell Regulator Co. The custom-built panel, the world's first giant control board built of aluminum, applies the same concept of one-location control which is widely used in industrial processing operations.

The dial-studded 32-foot-long Data Center panel allows a single building engineer to:

1) Continuously check and log temperatures and other data from all parts of the building.

2) Adjust remotely-located equipment and control devices.

3) Start and stop heating and air conditioning equipment.

4) Instantly make basic adjustments in temperatures in any area of the building.

5) Supervise flow in the fire alarm sprinkler lines, providing instant warning of fire or failure in sprinkler equipment.

Schematic layouts of various equipment systems are shown on the portions of the panel governing those systems, with control instruments located in the appropriate part of the layout. This greatly simplifies the control operation. A system of indicating lights also shows whether the various pieces of equipment are functioning.

### Man-power Savings

The Center gives the operating engineer a simple means of efficiently coordinating the highly complex mechanical functions of the heating and air conditioning system. Without such a control center, the same supervision of heating and air conditioning would require a crew of eight maintenance men taking temperatures and making adjustments in various parts of the building.

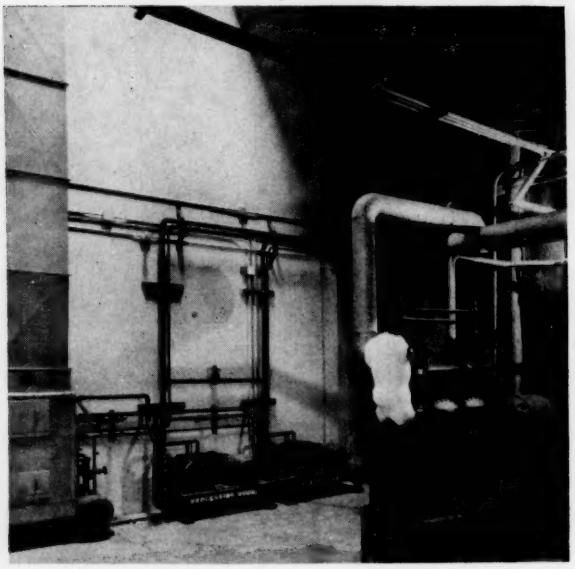
Walk-in refrigerators for the dining room and cafeteria kitchens are by United Cork Companies and the refrigerator doors by the Jamison Cold Storage Door Co.

## Hot-House Conditioning A Paying Proposition

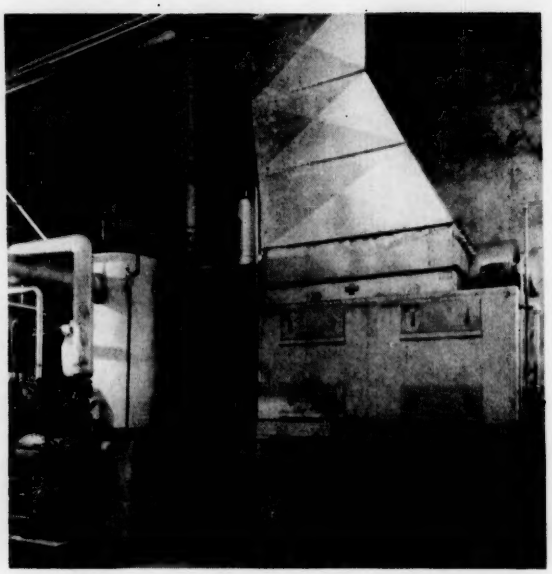
▶▶▶CLIMATE control year around and especially in the hotter summer months, pays the green house owner very good dividends on his investment says Lee Milot, Spokane florist. According to this grower and researcher, air conditioning can add as much as three months to the production season. Hot-house grower Milot indicates that florists can now provide their customer with every variety cut flower every day of the year.

Larger flowers with more vivid coloring are produced under controlled conditions, and healthier plants can be grown throughout the summer. However, contrary to the usual human comfort practice of dehumidifying, it is often necessary in the green house to add humidity. Milot accomplishes this through the use of a large aspen fiber pad over which water trickles while the conditioned air is being passed through.

# UNITED FROZEN FOODS CORP. CHOOSES



Two-plant operation is utilized by United Frozen Foods for high and low temperature applications. At left are condensing units and evaporative condensors for cooler and air conditioning systems.



Low temperature systems at United are served by two multicylinder ammonia compressors taking suction from a recirculator which supplies pressurized liquid where needed. Evaporative condenser and receiver are also pictured.

## *Los Angeles Wholesaler Splits Plant Demands With Use of*

▶▶▶ WAREHOUSE operators and frozen food wholesalers today, in addition to being beset with the numerous problems of distribution profit margins, labor relations, and general survival, must meet the chain operation competition which surrounds them. Therefore, they are forced to look for new and improved means of meeting these common obstacles. One prominent, and certainly most important, problem is their refrigeration systems.

Which system is best suited for the industrial warehouse? All manner of installations have been sold and installed; some good ones and many poor ones. The poorer installations have caused this question to be raised: Which system of refrigeration is best suited for this particular and unique industrial application—the refrigerated warehouse?

During the planning period of their new frozen food storage facility, United Frozen Foods Corp., Los Angeles, was confronted with this selfsame problem: Which refrigeration system is best adapted to their particular refrigerated warehouse? To assist them in the solution of their problem, they secured the services of a professional engineer with a background of practical experience in their specific field.

### Storage Capacities

United's storage facility is comprised of two minus 10° F freezer rooms with a combined capacity of 391,000 cu.ft., one high humidity 40° F cooler having a capacity of 4,000 cu. ft. and one 60° F processing room of 14,000 cu.ft. The combined cubic footage of the four rooms to be refrigerated is 410,000 cu.ft.

### Machinery Selection

In order to satisfy the wishes of the owners, the selection of the refrigeration machinery almost became a critical problem. Four major demands were to be met:

a) The plant must be completely unattended and automatic in operation.

b) First cost must be kept at a minimum although the machinery selected was to be of standard manufacture and reliability.

c) Connected horsepower to be minimum to attain desired results.

d) Average temperature difference of evaporative surfaces was to be not greater than 10° F.

### Refrigerants

Ammonia was selected for the two freezer storage rooms due to its having thermal characteristics which lend themselves to economical operation at the desired room temperature of minus 10° F.

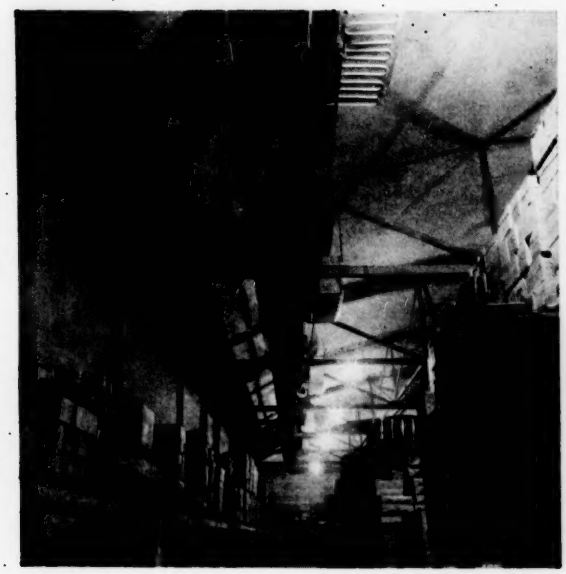
Refrigerant-12 was selected for the 40° F cooler room and the 60° F processing room. By selecting Refrigerant-12 it was believed that the problem of refrigerating the high temperature rooms on low temperature refrigerant pressure, which is costly and complicated, would be overcome.

### Evaporators

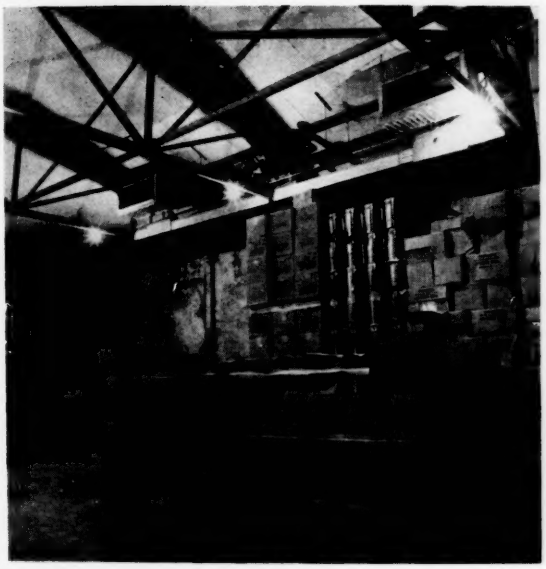
Careful consideration was given to various evaporators and the methods in which the refrigerant is handled within them. Recold recirculating flooded systems, using seven 60,000 Btuh evaporators equipped with ½ horsepower, 220v, 3-phase electric fan motors, were selected as the best suited for this installation. The evaporators were installed in groups of

# AUTOMATIC SYSTEMS

By WILLIAM H. BRITTIN



Main freezer storage view illustrates placement of evaporative surface within the truss area. The catwalk provides for inspection and service access. Note drain pan coiling which prevents defrosting spillage.



Smaller freezer room at United utilizes only two evaporators. Valves and piping between the units and accessible from the catwalk are automatically controlled during defrost operation. Liquid is forced back to the recirculator.

## *Refrigerant 12 and Ammonia for High-Low Temps Respectively*

two-twos, two-threes, etc., each group having its own recirculating system.

Recirculation of the refrigerant through the evaporators has many desirable features, such as, a full flow of refrigerant within the evaporator coil with refrigerant vaporization taking place in the accumulators rather than in the evaporators, making it possible to install less prime and secondary surface to arrive at the same end result. Thus, initial cost of the evaporators was reduced.

### Supplying Refrigerant

Refrigerant is supplied to the three recirculating flooded evaporator systems by one 75-ton capacity Watkins Recirculator which is installed in the machinery room. The Watkins Recirculator is quite advantageous for this installation from an operational and economical point of view. Being oversized, there is a surplus of accumulator capacity, as well as ample capacity for future plant expansion.

Accumulated refrigerant is recirculated directly to the evaporator recirculating systems; in other words, once the refrigerant has left the high pressure side of the plant it does not return to its source until it has completed its function. An abnormal high-level control is installed on the Watkins Recirculator which will stop the compressors, thus protecting them from wet gas and liquid refrigerant slop-over which could of course be very injurious to the compressors.

Make-up refrigerant for that which is evaporated off, is fed directly to the recirculating evaporator systems by three calibrated orifice globe valves which are hand-set to overfeed and maintain an over-flooded condition within each evaporator. The recirculation of liquid refrigerant within the evaporator-accumulator hook-ups and the recirculation of refrigerant and vapor to the Watkins Recirculator could be termed "recirculating within a recirculating refrigeration system".

Since the compressors are the heart of a refrigerating plant, the successful operation of the plant is greatly dependent upon the performance of the compressors. One 12-cylinder 50-hp and one 6-cylinder 30-hp Carrier compressors were installed. Each compressor is directly connected to its respective electric motor and is designed to operate at 1160 rpm. The compressors are equipped with unloaders and are designed to operate on single-stage compression with evaporator pressure as low as 0 psig.

### Desuperheater Installed

For condensing, a Recold Dri-Fan evaporative condenser with matching desuperheat coil is installed in the ammonia system. An advantageous feature is the fan and fan bearings are not in the high humidity air off the condenser, and thus are not exposed to a highly corrosive and wet condition. By reducing the temperature of the high pressure gas to the condenser, by means of the desuperheat coil, the formation of scale on the condenser tubes is materially reduced, which reflects an economy in power and maintenance costs.

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Author Wm. H. Brittin is a consulting refrigeration engineer. Prior to hanging out his professional shingle he had been a licensed refrigeration contractor. With exception of that enterprise and a period of employment as a professional engineer by the City of San Clemente, Calif., he has operated locker and private warehouse plants in southern California.

William H. Brittin

# Recirculating Within A Recirculating System at United

### Defrosting

Which method of defrosting to apply to a particular refrigeration system becomes a problem to the designing engineer. For this particular system, which is operating 100 per cent automatically, a hot gas defrosting system was specially designed and installed. Simplicity is the keynote of this system in which the defrosting cycle is controlled by electric time switches set to defrost the evaporators at regular intervals. During the defrosting cycle, the evaporator fans are stopped, the liquid feed is shut off while, at the same time, the hot gas line is opened and a liquid drain line to the Watkins accumulator is opened.

Hot gas is fed directly to the evaporators being defrosted. A high-side float (Armstrong) is utilized in the liquid drain line to control the rate of liquid return to the accumulator and to prevent hot gas from entering the accumulator. At the end of the defrosting cycle, all solenoid valves involved reverse their positions, the fans start and the evaporators are again in operation.

No two groups of evaporators are defrosted at the same time. With this system of defrosting, any oil accumulation in the evaporators is drained off with the liquid refrigerant to the Watkins accumulator where it is trapped and drained from the system, eliminating the problem of loss of refrigeration capacity due to oil accumulation.

### High Temperature Systems

The 40° F cooler is equipped with three Recold Humid-Air coils hooked-up to one 7½ hp Brunner R-12 compressor. With ample coiling, the cooler operates on a 5° temperature differential and the relative humidity is at a desirable level. Therefore, there is no defrosting problem involved.

The processing room at 60° F is cooled by one Recold horizontal ceiling air-conditioner coupled to one 10 hp Brunner R-12 compressor. Air distribution is by means of an air duct attached to the ceiling. Both Refrigerant-12 compressors discharge into one Recold Dri-Fan multi-circuit evaporative condenser.

### Offices Air-Conditioned By Heat Pump System

A multizone air-conditioner by Recold, together with one York 7½ hp, R-12 hermetic compressor, was installed to heat or cool the offices as required. This air-conditioner is designed with two zones, one of which conditions the general offices and the other conditions the private offices. With this zone arrangement, the air-conditioning system becomes more individualized in operation.

### Operational Performance Exceeds Expectations

Upon checking the operational performance of the plant at the end of six months' operation, it was found that the low temperature equipment is performing beyond design expectations. Although there is a connected 96.5 horsepower, the plant is operating at a connected 66.5 horsepower, with a combined refrigeration load of 40 tons which amounts to 1.66 horsepower per ton under actual operating conditions. Average installations of a similar nature are experiencing two or more horsepower per ton.

At 1.66 hp/TR this modern installation is therefore consuming 17 percent less hp/TR than previous conventional installations of similar size and application. This economy is directly reflected in the monthly power bills, and, as mentioned, effected certain first cost savings.

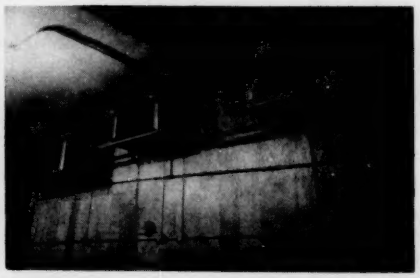
Where credit is due, credit should be given. Therefore, it is only fair to give credit to the Dacey-Plakos Corp. (refrigeration contractors) and the interested equipment manufacturers whose excellent collective cooperation made this successful installation possible.

### About the Owner

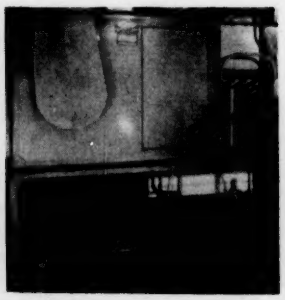
United Frozen Foods Corp. was established in 1936 by A. G. Read, President, and Albert Rainwater, Vice-president, as a frozen foods wholesaling enterprise. Under their skillful supervision, the corporation has progressed into a substantial business both in processing and distribution of low temperature preserved foods. It was on January 2, 1958, the United Frozen Foods Corp. took possession of their new facility.

Among the many frozen foods processed, and distributed by their own trucks from the central warehouse and sub-stations, are apples prepared for bakeries. United processes some ten million pounds of apples each year, of which approximately 70 percent are frozen and distributed in California and surrounding states. The volume of the other frozen foods distributed is in excess of 125 carloads per year.

Processing at this frozen food plant is under controlled environment. The ceiling hung air conditioning units in the far corner of the room supplies conditioned air through the duct work and diffusers.



Temperature differential at which these evaporators operate is less than 5 F. They serve a cooler room at United. Refrigerant-12 is the media. Note the middle evaporator is smaller than its two companions.



This packaged multi-zoned air conditioner serves the firm's offices.

# Refrigerated Warehouses Offer Diversified Services

## TARS First—"Edsicles"

▶▶▶MODERN CONCEPT of refrigerated warehousing is to keep abreast of refrigerated requirements of all industries, and to provide such services where they can be accomplished economically for the client and profitably for the warehouse stockholders. A demonstration of one such activity took place in Chicago in August when a Trans-American Refrigeration Service Ltd. member prepared an automobile for a cold test and sales promotion venture for a division of the Ford Motor Company.

Sergeant John Bennehy of the Chicago Police force thought he was seeing things when up Michigan Avenue came a car covered with ice — the temperature at the time was 85 F. The car; a 1958 Edsel, colored ice blue and snow white, of course, had been deep frozen at Continental Freezers' plant and was transported to Michigan Avenue in a refrigerated truck.

To help sweltering Chicagoans recall what real ice looks like and to demonstrate the auto's advantages — the first ice covered car to appear in Chicago in August or anywhere else in the world in August (North and South Poles excepted) — Continental Freezers of Illinois, Chicago member of TARS, submerged and Edsel car in a blast freezer at minus 20 F. for 36 hours for the Ford Motor Co.

Ken Stepleton, President of Continental, says that any TARS warehouse, and there are about thirty of them from coast to coast, can freeze anything from a pea to a popsicle to an Edsicle.

Although this Edsicle was frozen at Continental Freezers' plant, freezing cars is not new to Ford Motor Company who sponsored the promotion. Technicians at the Company's research and engineering center in Dearborn, Michigan, constantly test cars at subzero temperatures in the center's "Little America" — a huge ice box where the temperature never rises above minus 20 F. These "cold tests" are designed to check the performance of products.

Icicle appearance on the automobile was accomplished by Continental warehouse and engineering personnel. Equipment used for spray icing and immersion freezing at this Illinois plant served for the "auto-freezing" technique. Commercially available spray equipment which included hydraulic pumps, air compressors and mobile equipment, had earlier been assembled by Continental in patentable method of spray freezing for food stuffs. This is the equipment which conveniently iced the Edsel.

## *More Engineering Features of Raleigh Warehouse*

▶▶▶OPERATIONAL, engineering and construction features of the Southeastern Bonded Warehouse, Raleigh, No. Car., were reported on page 18, August '58 INDUSTRIAL REFRIGERATION. Since that time additional engineering data on this expandable plant, has been received from V.C. Patterson, Pres., Recony Sales & Engineering Corp., Richmond, Va., consultants and contractors for the owner.

Completed portion of refrigerating equipment room is shown in the illustration above. The compression ammonia system was designed with surge drums, ammonia mains, etc. sized for the entire plant, so that coils and compressors only would have to be added as the plant grows.

The main features of the ammonia system are : liquid ammonia recirculation with hot gas defrost for the large fin coils; oil for underfloor heating is heated in an ammonia heat exchanger using discharge gas. Thus, the underfloor heating system adds to the condenser capacity and also provides an additional effective oil separator.

This plant is automatic with the compressors controlled by suction pressure. An evaporative condenser located on the roof takes care of both compressors. At the present time this plant is operating single stage. When rooms are added, the plant is designed so that two-stage operation can be provided.

# DETROIT DEVELOPERS OPEN SECOND CENTER

## Northland Principals Complete Earlier Planned Eastland Project

**ADAMS-EUTH-BURNS**
Program Committee
Geo B. Bright Chapter, Napre

▶▶▶GREATER DETROIT'S newest integrated regional shopping center, EASTLAND, located at the intersection of 8-mile and Kelly Roads in Harper Woods, ranks among the world's largest regional shopping centers. Public opening of Eastland Center, a totally air conditioned project utilizing an industrial refrigeration application, took place July 26, 1957. Eastland Center was incorporated August 24, 1950. Early construction plans were sidetracked by the Korean Police Action and its steel shortages, and then postponed until after the completion of Northland Center in 1954. Ground was broken for Eastland on August 12, 1955.

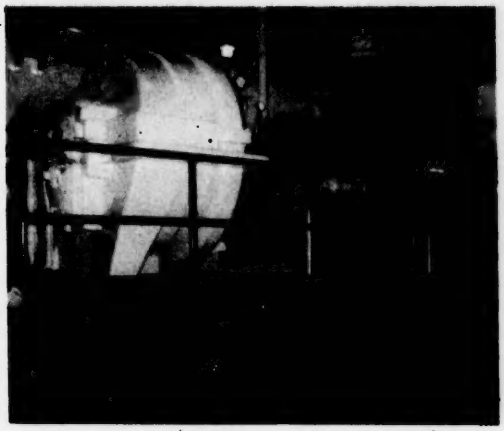
As was the case with Northland Center (reported in INDUSTRIAL REFRIGERATION, January 1955[1]), Eastland Center, Inc., a subsidiary of The J. L. Hudson Company, is the corporation that planned, developed and built the Eastland Shopping Center. The corporation leases all buildings in the Center, maintains and supervises the shopping center properties, controls the development of contiguous, wholly-owned Eastland real estate properties. The J. L. Hudson Company is a tenant of Eastland the same as 72 other stores.

### Duplicates Northland

Architects of Eastland Center were Victor Gruen and Associates who also designed Northland. That firm has become internationally recognized for pioneering the new concepts of complete and bold area planning for regional shopping centers—a recognition which is being reflected in major shopping center developments everywhere; like the Southdale Center near Minneapolis (see INDUSTRIAL REFRIGERATION November and December 1957); Valley Fair and Pala Centers near San Jose; Bay Fair Center near San Leandro; South Bay Center near Los Angeles; Woodmar in Gary; Waialae in Honolulu; and, (in construction) Glendale Center near Indianapolis. Director of contracting and construction was Jas. T. Mitchell, Superintendent of properties for the J. L. Hudson Co.

Supervisory and operating activities accomplished by a staff of 95 persons, including executives, supervisors, office personnel, engineers, maintenance and protection personnel, is under the general management of Horace Carpenter, Jr., Vice-President. Carpenter served Northland in the same capacity as did Chas. Rouse, Project Engineer. Rouse is now Chief Engineer of Eastland.

[1] "Tenants Purchase Refrigeration Service In Large Shopping Center", INDUSTRIAL REFRIGERATION, Jan. '55, Page 13.



View from one side of the 1800-ton condenser-chiller unit, showing the 900-ton compressor and 1,000 hp synchronous motor drive. An identical unit shares the opposite side of the installation.

Northland and Eastland projects' engineer, Charles Rouse, now chief engineer of the Center receives a congratulatory salutation from Leonard Bedard, President, G. B. Bright Chapter NAPRE, Detroit.

Main control panel as viewed from the watch engineer's position at Eastland Center. Firing and steam generating, refrigeration and chilled water circulating, system controls are embodied in this panel.

NAPRE visitors pause to inspect the four dual oil-gas fired steam generators at Eastland. George B. Bright Chapter was treated to a preview of the Center two months prior to its official opening.

Eastland, like its sister shopping center at Northland, set out to duplicate insofar as possible, the principal facilities and advantages of downtown shopping, planting them in a large predesigned community to serve people for whom downtown shopping is either difficult or otherwise only an occasional opportunity. The $25 million dollar Eastland has a large department store in its core and conveniently grouped around it are 72 stores and services of all types—including a postoffice.

### Tenant Utility Services

Refrigeration for air conditioning is produced in the power house (Building G) at the west end of the Center by four large centrifugal compressors driven by four 1,000 horsepower motors. This equipment can produce in a 24-hour day 3,600 tons of refrigeration or the equivalent of the heat absorbed in melting 72 fifty-ton-cars of ice. The cooling system at full load puts into circulation 6,000 gallons of chilled water per minute. Chilled water is metered to each tenant through pipes connecting with individual air cooling units which are independently operated and controlled by an electrical and pneumatic control system. A central control system located in the power house enables an engineer to change any store from heating to cooling and also control all public lighted spaces with a flick of a switch.

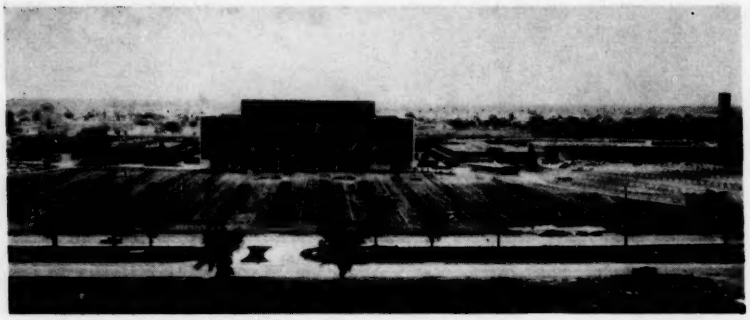
City water is supplied and metered to all tenants from Eastland's power house, but gas and telephone utilities are furnished direct to tenant stores by these utility companies.

Heating is also metered to tenants from the power house. The heating system consists of four oil- and gas-fired steam generating units capable of producing 120,000 pounds of steam per hour at 125 pounds pressure, requiring 1,000 gph fuel.

Electricity is also metered to tenants directly from Eastland's power house. Power is being furnished to Eastland Center, Inc., by an Edison distribution substation. There are more than 500 electric motors on the project—(1/8 hp to 1,000 hp). Electric capacity of unit substations is approximately 13,000,000 watts.

### Detroit Chapter, NAPRE, Tour

During the May '58 tour of Eastland Center by members of the George B. Bright Chapter, NAPRE, Detroit, Charles Rouse, the project engineer in-charge pointed out to the group that when the center was still in the planning stage, experience gained in the operation of Northland Center proved very valuable.



Totally air-conditioned, Eastland Center consists of the J. L. Hudson Co. department store as the principal activity, surrounded by 72 sales and service firms which constitute this one-stop shopping center.

Improvements in layout and operating procedures, also utilities distribution and control, were made possible by the previous experience and utilization of late design developments.

Centrally located centrifugal refrigeration units of the dual type were installed. As at Northland, two compressors and two motors utilize a single condenser and chilled water cooler. Water towers were designed with eight cells. With each of the four refrigeration compressors, having a total capacity of 900 tons, the combined total equals the 3600 tons maximum.

Synchronous electric motors using 4600 volt primary current were selected as refrigeration compressor drive units. This provided a means of improving the power factor for all the current used in the Center. Motors operate at 1200 rpm, and compressor speed of 4,600 rpm is obtained through speed increasers.

### Flexible Operating

The entire set-up of the refrigeration units affords a wide range of capacity, from a very light load using one compressor and one cell of the water tower to maximum capacity of eight water tower cells and four compressors. Maximum horsepower required for full capacity of the refrigeration units total 5,000 hp; 4,000 hp for the four compressor motors, and an additional 1,000 hp required to operate motors for tower fans, condenser water pumps and chilled water pumps.

At maximum load there is 12,000 gpm of water circulating in the condenser water system. Towers are of the updraft design. The condenser water main is 24-in. diameter. Refrgerant condensers are shell-and-tube type, single pass. Refrigerant-11 is used. Pressure on the low temperature side normally is near 20-in. (Hg), vacuum. The high side refrigerant pressure is normally 0 to 6 psig.

Chilled water is distributed to fan units (located in penthouses in most cases) where the air supply is cooled to maintain the temperatures as called for by thermostats in the area served. Chilled water coolers are a triple pass type. The chilled water pumps were selected to provide a flexibility to match that of the condensing units—two pumps having a capacity of 1,500 gpm each, and one pump with a capacity of 3,000 gpm.

### Plant Appearance Pleasant

In designing the Center, special consideration was given to keeping the power house and surrounding area of a pleasing appearance. The water towers are an example of how successful the designers were. From external appearances no one would know they are there. The power house itself has a high percentage of natural light through clear plate glass window area which allows an unobstructed view of the boilers, equipment and operators. It is perhaps the only air conditioned power house in the U. S. . . . or at least one of the few.

### Chilled Water Regulation

Chilled water for space cooling is distributed through a system of piping whereby the supply and return enters each building through a constant differential valve station, thereby preventing short-circuiting of any building due to the resistance factor. A differential pressure of about 40 lb. is maintained across the supply and return lines. The chilled water supply pressure at the power house varies, depending on the load, from 160 to 250 psig.

As the load increases with the warmer weather the higher pressure is required to move the additional chilled water used by the individual tenants. A static pressure of 60 lb. psig is maintained in the chilled water system to guarantee that the system will be completely filled at all times. Air release devices purge any air that may enter the chilled water system. Water loss occasioned by leaks at valves or otherwise, is replaced by makeup water introduced on the low pressure side of the pumps.

### Independent Climate Choice By Each Project Lessee

Each tenant can maintain comfort conditions as he may desire by means of thermostat adjustment within his own area. However, a master control system provides means of starting and stopping of the ventilating units, so that the engineer on duty can follow whatever programming is requested or necessary for the needs of the individual tenants. The control system is a combination of low voltage electric circuits and pneumatic units. There are 82 air handling units for the 72 individual stores.

### Boiler Facilities

The steam generating plant is comprised of four water tube boilers, each having a normal capacity of 30,000 lb/hr, or an aggregate capacity of 120,000 lb/hr. Firing is done by combination gas and oil-fired units which have the feature of being changed over from one fuel to the other by means of minor adjustments. In the event of gas not being available, the units can be switched over to oil in a matter of a few minutes. Gas in the Detroit area is supplied to many commercial users under contract permitting interruption of the gas service if necessary during peak demand on the system.

Steam is distributed throughout the project at 125 psig and at each individual user's equipment pressure is reduced to 18 psig. This reduced pressure is used for space heating and also process. Steam delivered to individual tenants is measured by means of steam flow meters and the condensate is not returned to the power house. It has been found a disadvantage to try to recover the condensate.

### Invoiced for Utilities

All other utilities such as chilled water, domestic water and electricity are metered and billed directly by the Center to each user. Steam is charged at a contract price based on 1000-lb units. The electric energy is charged for by kilowatts. Chilled water for cooling is measured in therms, or 100,000 Btu's, by a therm meter. The therm, a rather new term to the refrigerating engineer, is used as a unit of measurement of service.

**Taking advantage of the situation, a number of the chapter members' wives dined and shopped at Eastland while the money making half of the family inspected the engineering features.**

It is a measurement of heat absorption and is arrived at by raising 10,000 lbs of water 10 F, which gives the equal of 100,000 Btu's being absorbed. Measurement is accomplished by the use of a combination flow meter and temperature sensing device which automatically measures the temperature of the water passing in one line and out the other, thereby providing a temperature differential which is automatically multiplied out in the meter to read as therms.

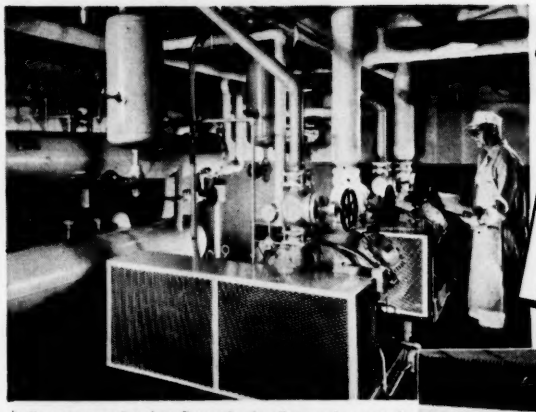
The Center does not sell fuel gas. The gas company sells gas directly to the tenants and bills them for the same. Eastland does handle the distribution of domestic water to the tenants which is charged for by a unit of 1000 cu. ft.

### Engineer Personnel

The entire plant is operated with six operators and six maintenance men. One man on a shift is capable of and does operate both steam generating facilities and the refrigeration equipment. Contributing to this efficiency is the fact that the plant is highly instrumentated and also closely supervised by automatic devices which give visual and audible warning of abnormal conditions throughout the Center.

### First of Air Conditioned Central Power Stations?

The power house is in a class by itself as far as design and construction is concerned. It has a large amount of glass window area which permits a clear view from the outside of the equipment and operators in the interior. This was found to have introduced a problem of heat due to the gain from the sunlight on the large plate glass area. In order to have the interior comfortable it was found necessary to provide air conditioning. The air conditioning system of the power house comprises approximately 78 TR!

View of the Thiele Engine Room containing an all-Vilter system—compressors, condensers, receivers, transfer system—providing refrigeration for the entire plant.

**Vilter Report Card**

| Grade | Service |
|---|---|
| A | Proper temperatures and humidities at close tolerances. |
| A | Low operational cost. |
| A | 5 years of uninterrupted refrigeration service. |
| A | Attractive appearance. |

In the sausage cooler where Braunschweiger liverwurst, summer sausage, mortadella and many others are being readied for shipment, Mr. Fred Kreckl, chief sausage maker is critically inspecting his wares.

# "Ja, das ist gute Wurst!"

THIELE

**"Firm, smooth Thiele sausages... no shrinkages... no shrivel—are the result of quality processing of the finest in ingredients and of close temperature and humidity control by Vilter refrigeration units," says Mr. Fred Kreckl, Chief Sausage Maker, W. F. Thiele Company, Milwaukee.**

Sausage must be good, taste good, look good—have real appetite appeal to sell in today's competitive food market. Exact "cold processing" is vital in making quality sausages—during production, aging, and holding prior to shipment. And there is no better way to maintain correct temperatures and humidities than with Vilter Zer-O-Disc finned surface. These coils produce slow, even, positive air circulation naturally by convection... flood the room with cold ... no "dead spots"... practically eliminate evaporation which cuts profit. Product discoloration and shrinkage are minimized.

Additional Vilter equipment at Thiele's includes: Ammonia VMC Multi-cylinder compressors as well as a Shell and Tube Condenser, Liquid Receiver, Liquid Transfer System and Horizontal Accumulator. A complete Vilter truck charging system is also installed. "*This equipment has met all performance specifications and operated satisfactorily for over five years with a minimum of routine maintenance*," says Mr. Kreckl.

Call in your nearest Vilter refrigeration engineer and let him show you how you can improve your sausage and meat cooling requirements, and save with Vilter refrigeration equipment, Zer-O-Disc fin coils, and Packicers.

**Write for your free copy of the *Special Case Study* of this application and for helpful bulletins to The Vilter Manufacturing Company, Dept. H-801, 2217 S. First Street, Milwaukee 7, Wis.**

Bulletin 817 Vilter VMC Ammonia Compressor

Bulletin 518 Vilter Zer-O-Disc Finned Cooling Coils

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REFRIGERATION and AIR CONDITIONING

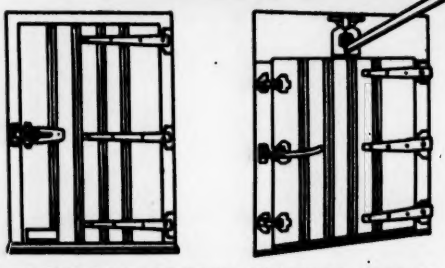
**THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin**

Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice & Polarflake Ice Machines

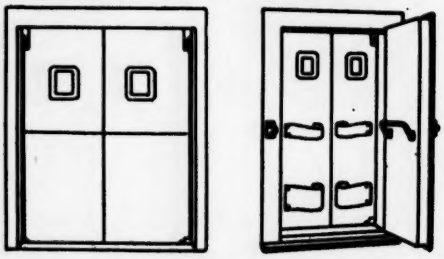
# "Butcher Boy"

Since 1885

**EXCLUSIVELY ENGINEERED**

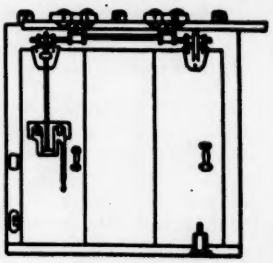


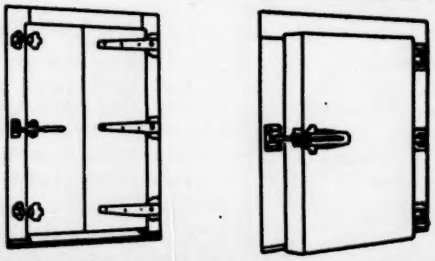
**STANDARD COOLER-FREEZER DOORS**



**STANDARD VESTIBULE AND AUTO-CLOSE DOORS**

**HORIZONTAL SLIDING DOORS (Manual)**





**LOW TEMPERATURE INFITTING and OVERLAP**

**AUTOMATIC ELECTRIC DEFROSTERS**
**WITH THERMOSTAT CONTROL**

**CATALOGS AVAILABLE UPON REQUEST**

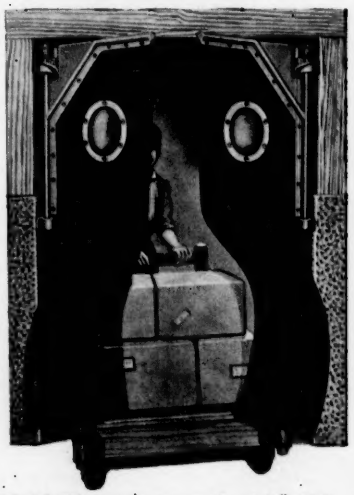
## FLEXIBLE RUBBER BATTEN DOORS INCLUDING STANDARD DOOR FRAME at no extra cost!

### TYPE "TSH" WITH SEMI-HEIGHT MOUNTINGS

Especially adaptable for smaller door openings.

***THEY PERMIT***

1. Safe passage of hand or power operated equipment with wider pallet loads.
2. Corner cutting with hand and power trucks.
3. Repeated abuse from impact of trucks at minimum damage and maintenance costs.



Model TSH battens are made of ¼" thick Neoprene (no grain) or of ¼" tough specially compounded rubber, reinforced with 2 layers of heavy cotton duck. Materials remain flexible even at extremely low temperatures.

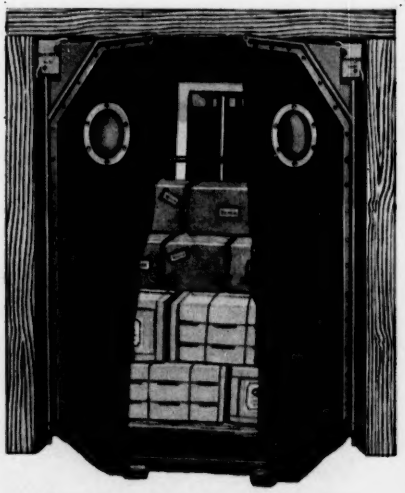
Model TSH battens are furnished with No. 12 gauge galvanized steel jamb guards applied 4' 0" high with *no protrusions into the clear door opening.*

### TYPE "FH" WITH FULL HEIGHT MOUNTINGS

Designed for wider and "straight traffic" doorways.

***ADVANTAGES***

1. Loss of refrigeration is held to a minimum.
2. Extra rigidity — tighter doorways.
3. Eliminates exposure and drafts near loading docks or at other openings.
4. Flexibility of battens permits repeated abuse and shock of mobile equipment contacts.
5. Permits movement of trucks and pallets at high speed in and out of refrigerated or other storage areas.



Model FH battens are made of ¼" thick Neoprene (no grain) or of ¼" tough specially compounded rubber, reinforced with 2 layers of heavy cotton duck. Materials remain flexible even at extremely low temperatures, and will not tear under most severe conditions.

**BUTCHER BOY REFRIGERATO**

1000 BUTCHER BOY DRIVE

# REFRIGERATOR DOORS

## *Electro* SAFETY-SLIDE HORIZONTAL DOORS

**FEATURING** **STRUCTURAL SIMPLICITY**

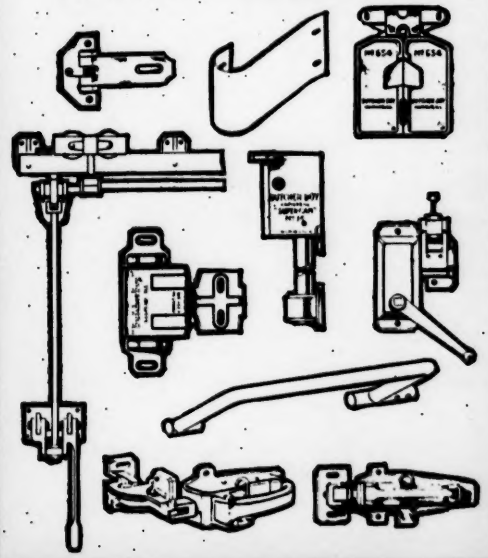
- **MECHANICALLY SOUND**
- **COMBINED "SPEED AND SAFETY"**
- **EXCLUSIVE AUTOMATIC SEALING "Gasket Assembly"**
- **SIMPLIFIED INSTALLATION**

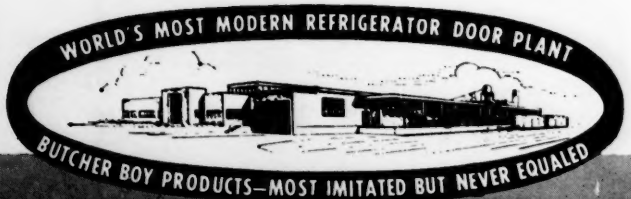
**Bi-Parting Horizontal Sliding Doors Available. CAUTION: Not recommended for use in cooler or freezer areas. Bi-Parting double horizontal sliding doors, of necessity, require gasket seals where the doors meet at the center of the opening. Hence, gaskets must be applied at "vulnerable" areas, exposed to contact by trucks or other objects which will rip or tear the gaskets, thereby destroying the necessary seal between the doors. *Field experience dictates this precaution against the use of bi-parting sliding doors.***

### *14 OUTSTANDING FEATURES*

1 Overhead chain drive.
2 COMPACT—Electric Power Operator Assembly.
3 Heavy malleable iron Hanger Brackets.
4 Hyatt roller bearing Door Bracket.
5 Manual "Safety Release".
6 Automatic Sealing Assembly.
7 Automatic Electric Defrosters.
8 Concealed electric systems.
9 Safety Edge.
10 Complete Frame metal clad.
11 Special "SEAL" and "SILL" gaskets.
12 Defroster Drain Outlet.
13 Manual "Interior Safety Release".
14 "Roller-Type" Floor Wedges.

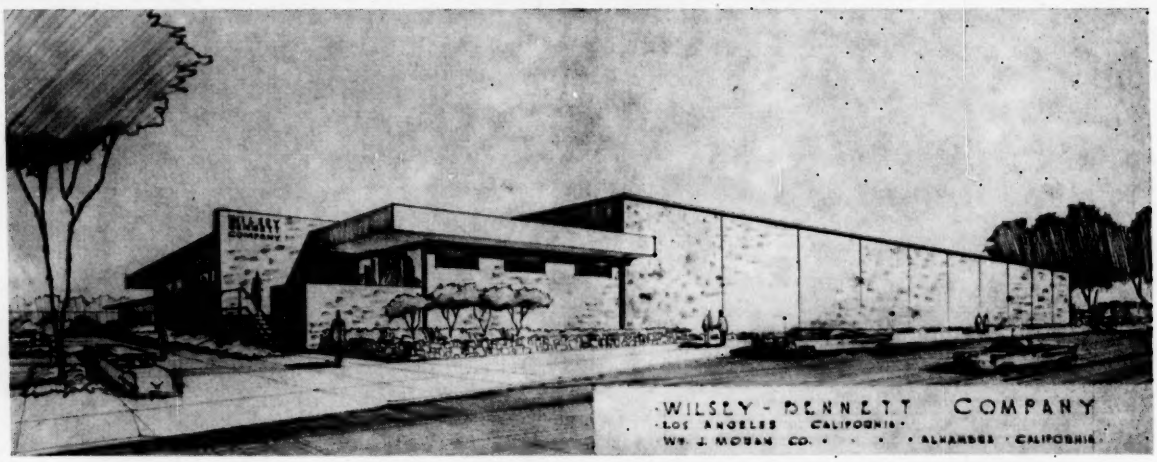
### DURABLE HARDWARE






DOOR CO., Dept. "IR"
EVARD, ILLINOIS

# NEW BUTTER PACKAGING PLANT




## For *Wilsey-Bennett,* Los Angeles

▶▶▶ FEW MODERN butter packaging plants have been constructed in the United States in over a decade. The Wilsey-Bennett Co. of San Francisco is now erecting a new butter processing plant with an eventual daily capacity of over 200,000 pounds on Mission Road in Los Angeles.

Building costs are in excess of a half million dollars, including land. Refrigeration, packaging and handling facilities represents another half million dollar investment. Total plant area will be in the vicinity of 35,000 square feet, at dock height and of tilt-up construction. Ceiling height is sufficient for full palletized operations.

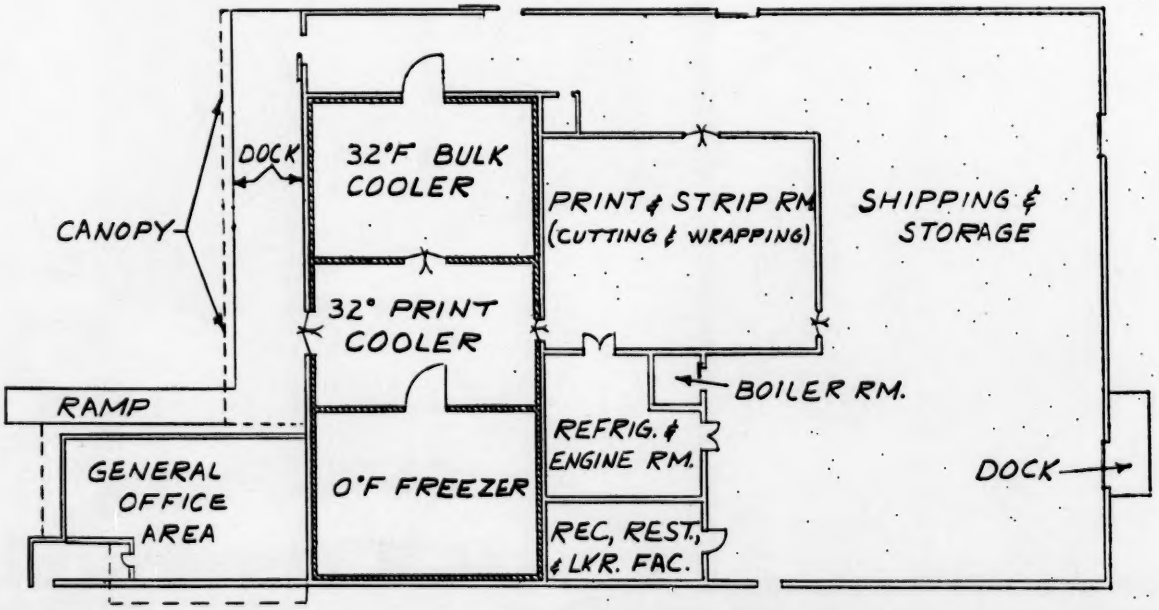
The new structure will contain one 40 x 60 ft freezer, and an equal size packaged butter cooler. The bulk butter cooler will be 50 x 60 ft. Cooling in the freezer and cooler rooms will be provided by Niagara Blower Co. equipment. Compressor and evaporative condenser are by Carrier Corp.

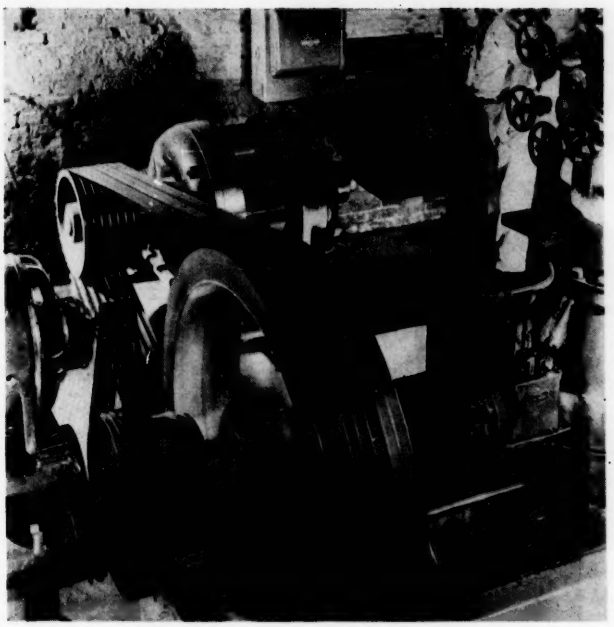
**Largest Western Processor**

The building is designed and under construction by the William J. Moran Company, consulting engineers and general contractors, Alhambra, California. Refrigeration contractor is Felix W. Powers, Powers Refrigeration, Los Angeles.

Land area on which the new structure is located is 88,000 sq. ft. which provides a starting hourly capacity of approximately 20,000 pounds, with room for 35 percent expansion. It will be the largest plant in capacity west of Chicago. The H. C. Christians plant, Chicago, is reported as having the highest hourly capacity in the United States at present.

Offices in the new structure will be air conditioned and dock facilities will accommodate 11 trucks or semi-trailers. Wilsey-Bennett Co. was established in 1919 and are presently the largest processors of butter on the Pacific coast.





# LONG-LIVED V-BELTS

By D. A. LOCKE

▶▶▶ PROPERLY engineered V-belt drives provide one of the most efficient and economical means of power transmission in the refrigeration field, with a minimum of maintenance. However, as is often the case with the best of equipment or accessory designs, the manufactured item can be ruined through improper installation and/or lackadaisical upkeep.

Attention to various factors will help prolong V-belt life and assure continuous production. These factors, checked periodically, can mean money for other engineering improvements or added dividends. They include proper sheave alignment, tension and sheave inspection.

### Alignment Most Important

One of the most common causes of excessive belt and sheave wear is improper alignment. It is important that driver and driven shafts be parallel so all V-belts will operate at right angles to the shafts. If this is overlooked, the V-belts on one side of the set are drawn tighter and will pull more than their share of the load. As a consequence, these belts wear out faster and maintenance costs increase.

Things to look for in determining whether sheaves are improperly aligned are sheave grooves that are more highly polished on one side than the other, belts worn more on one side than the other, continuous squeaking, and overheated bearings.

Alignment can be readily checked by placing a straight-edge or cord across the rim faces of the driver and driven sheaves. If they are properly aligned and shafts are parallel, the straight-edge will contact the rim face at four points – two points diametrically opposite each other on each sheave, as shown in Fig. 1.

### Maintain Proper Tension

Maintaining correct tension prevents whip and provides maximum sheave grip. Both over and under-tension of V-belts can cause trouble. Over-tension causes excessive bearing pressures. A loose belt can result in slip burn, snub breaks (see Fig. 2) and ruptured cords in the grommet or plies. Figs. 3 and 4 illustrate belt construction showing why tension is important.

There are three types of V-belt construction available. The cross-sections pictured in Figs 3 and 4 depict the grommet type belt in which cords are twisted into cables and placed in the belt near the top. Other two types of belts consist of laminated construction with the pulling cords spaced in the upper part of the belt, or laminated construction where the cords are arranged throughout the core.

D. A. Locke is Supervisor-Sales, Texrope Drive Department Allis-Chalmers Mfg. Co., Milw., Wisc.

Fig. 1 — "V-Belt Tex" demonstrates a proper method of checking alignments. A straight line should pass through diametrically opposite points on the driver and driven sheaves.

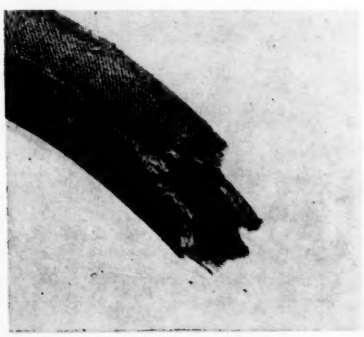


Fig. 2 — Snap Breaks on V-belts such as pictured here are caused by cracking the whip. It reveals a sudden snap and the cover itself indicates slip. Proper tension will keep belts taut preventing excessive wear and breaks.

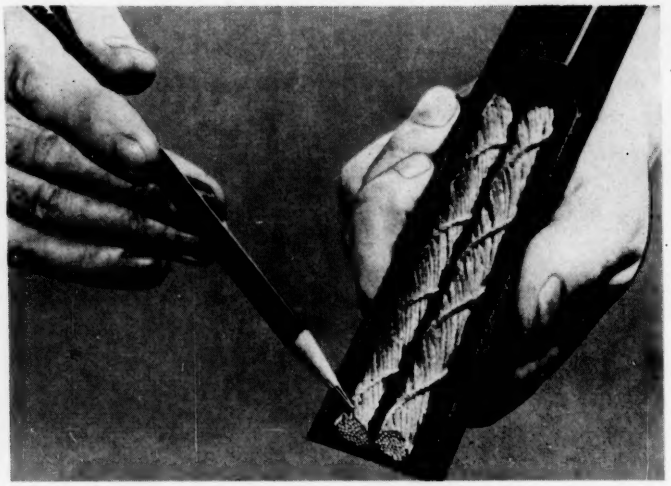


Fig. 3 — Cut-away section of "Texrope" V-belt showing the twin grommets cushioned and encased in solid rubber for protection against shocks and moisture. Grommets are precisely positioned to utilize all the strength built in.

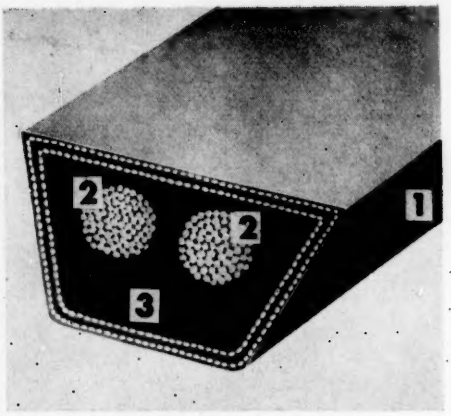



Fig. 4 — Cross section through one of 3 types of V-belts available in the industry. Actually a cross section of the belt pictured in Fig. 3, the numbers indicate: 1, two-layer bias-cut fabric cover, rubber impregnated; 2, twin grommets of continuous hard twisted rayon cords; 3, thick rubber shock absorber

Insufficient tension is often the greatest hazard to belt life.

Proper belt tension is not difficult to determine. Apply moderate pressure to the belt at a point midway between the sheaves. A good working illustration of this procedure is Fig. 5. A belt that can be depressed an amount equal to its own thickness for each 48 inches of unsupported length is considered to be properly tensioned (see also Fig. 6). For practical purposes, the center distance of the drive can be considered as the "unsupported belt length" except where an idler is used.

To determine belt tension by slapping requires experience in getting the proper "feel". A correctly tensioned belt feels "springy" and "alive" when slapped by hand (like V-belt Tex is doing in Fig. 7); a slack belt is dead and lifeless. It should be remembered that new belts need a breaking-in-period. A certain amount of stretch occurs after belts have been installed so they should be checked regularly for tension during the first few days of operation.

### Sheave Inspection

Sheaves should also be inspected regularly for burrs, rough spots or excessive groove wear. Grooves kept free of dust or foreign matter will prevent side wall wear; belts will maintain proper pitch line position and assure highest drive efficiency. Smooth sheave walls and proper belt tension (see Fig. 8) assure maximum sheave grip thereby adding life to the drive. Periodic checks of sheave grooves with the proper groove template will disclose worn surfaces. Groove walls should be true and at the correct angle.

Fig. 7 — "V-Belt Tex" demonstrates: Determining belt tension by slapping the belt sharply with the hand requires experience in getting the proper "feel". Correctly tensioned belt feels "springy" and "alive"; a slack belt, lifeless. If a belt is too tight, it won't spring.

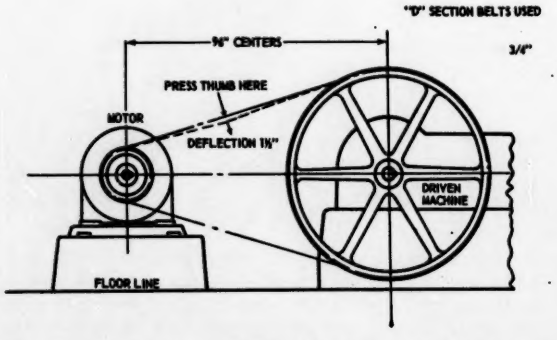



Fig. 5 — Deflection method, according to the author, is best of several ways to obtain correct operating tension.

Fig. 6 — With moderate thumb pressure applied to a belt at a point midway between sheaves (see again Fig. 5), the deflection of the belt should equal its own thickness as illustrated here for each 48 inches of unsupported length. For practical purposes, the center distance of the drive can be considered as the unsupported belt length, except where an idler is used.

### Belt Cleanliness

Oil is another hazard to belt life. When exposure to oil cannot be prevented, it is good economy to install oil-resisting belts. Clean belts in clean sheaves help get the greatest useful life from belt investments. This can best be accomplished by wiping belts free from grit and oil with a dry cloth when the drive is at rest.[1] Under no circumstances is belt dressing recommended for V-belts.

### Down-Time Practice

It is advisable to remove all tension from belts connected to machines which are idle for extended periods of time. With bearing pressure removed, the lubricant breakdown between balls and races or between journal and bushings is avoided and the possibility of bearing oxidation is minimized. Also with tension released, the belts do not tend to take a permanent "set".

Belts retain their usefulness best if stored in a cool, clean, dry area, placed in bins or hung over wall pegs.

[1]Safety First: On automatic or remote controlled drives, pull switch or circuit breaker, and lock out.

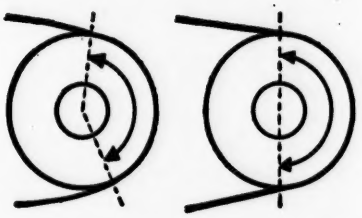


Fig. 8 — When proper tension is maintained, a V-belt grips more of the sheave and grips it harder, adding life to the drive. Sketch demonstrates how proper tension provides maximum sheave grip.

Sharp bends which could result in a permanent "set" are to be avoided. Tying matched sets of belts together will avoid mismatching. This is important because V-belts in a multiple V-belt drive should not be replaced on an individual basis if the drive is to operate at its highest efficiency.

Regular check-ups on sheave alignment, belt tension and condition of the sheave grooves will extend belt life. Such inspections can be accomplished quickly and efficiently when the maintenance man or service engineer knows what to look for.

## Survey Made Of V-Belt Applications

▶▶▶NINE industries were cited in a recent survey as the major users of industrial V-belts. According to a July release by DuPont, these industries are: metal-working; mining and quarrying; petroleum, chemical and food processing; power and electrical utilities; agricultural and textile equipment; and construction machinery. Three of these — metal-working, mining and quarrying, and petroleum processing — together use more than 50 percent of all belts.

### Appliances Lead

The metalworking industry uses at least a quarter of all the industrial V-belting produced in the United States. This includes belting used within the plant, as well as belting installed on new equipment such as air conditioners, washing machines and dryers, and industrial machinery. One out of eight industrial V-belts is used in the petroleum processing industry. About 90 percent of the V-belting purchased annually by this industry is replacement, 900,000, using five standard industrial sizes.


USE Templets FOR MAKING BETTER ICE

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To the ice manufacturer who has never used TEMPLETS, may we explain that this product is a tempering ingredient that is made up in the form of a little green tablet. Two or three TEMPLETS dissolved in a can will improve the quality of your ice and leave no taste, no odor, no color.

TEMPLETS make your ice stronger and reduce its tendency to crack during cutting or scoring, and also give you a clearer cake. White butts, heavy cores and the cloudy veil that your customers don't like can be completely or partially eliminated. TEMPLETS help clear your ice of imperfections caused by raw hard water.

With TEMPLETS you can make more ice during the peak summer months in the same number of cans. TEMPLETS reduce cracking and breaking in the cakes, so you can freeze raw water at lower brine tenk temperatures, use the cans more often, and make more ice.

You can use TEMPLETS at a cost of only one cent a ton of ice!

Send the coupon today for a trial sample. Convince yourself of TEMPLETS' quality at our expense.

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# NAPRE QUESTION BOX

**HAVE A QUESTION? Address it to Prof. Harold P. Hayes, Dean of Engineering, State Polytechnic College, San Luis Obispo, Calif. Answers appear monthly in this department on problems forwarded by NAPRE members. Comments from all readers welcomed.**

H. P. Hayes

## Determining Low Charge Of System Restriction

**QUESTION: Is there any way to determine whether a sealed system is restricted or low of refrigerant without opening the system?**

**R.H.S., Mississippi.**

**ANSWER:** If the hermetic unit is new it will be shipped from the factory dehydrated and with the correct amount of oil and at least a holding charge of refrigerant. The amount of refrigerant to be charged into a system depends on the type and size, the length of the lines, and numerous other factors.

The sight glass in the liquid line, used in small and medium sized installations is a convenient means for determining the correct charge. If any bubbles or foam is seen in the sight glass with system in operation there is not sufficient refrigerant. Most direct expansion systems with automatic or thermo-expansion valves have a sufficient charge if 5 to 10° F superheat is obtained at the suction end of the evaporator coil. This superheat may be checked with a thermometer. The suction pressure is read at the compressor, and the saturation temperature is determined from refrigeration tables. The temperature of the thermometer is read and the difference in temperatures is the superheat.

If the liquid line is restricted ahead of the expansion valve the restriction may be noted by frosting at the restricted area.

It is wise to install a strainer in the suction line if the history of evaporator is not known. A dehydrater or drier installed in the liquid line is always a good investment. Several companies are now producing dehydrators which are used with liquid indicators.

**–J.M. McG., S.L.O.**

## Varying Opinions On Measuring $NH_3$ Service

**QUESTION: Wouldn't it be more practical in measuring ammonia supplied to a customer from a pipeline, especially if he is a large user, to alternately feed an amount into a vessel and then discharge it from the vessel into the customer's service line? Specifically I am referring to Metering Ammonia question and answer which appeared on page 27 of the May issue of Industrial Refrigeration. It seems to me I saw a plant in California where such an arrangement was installed.**

**–E.R., Chicago.**

**ANSWER No. 1:** It would seem that if a quantity of liquid ammonia were fed into an auxiliary receiver on an intermittant basis that the customer's line pressure would fluctuate considerably between the head pressure at the condenser and the pressure that would represent an exhausted receiver (that is just before the auxiliary receiver was recharged). If this were the case, the conventional refrigerant controls would respond poorly. Refrigerant control engineers go to great lengths to prevent such occurances and supplement their merchandise lines with control devices which maintain head pressure in winter operation.

**–J.A.H., San Luis Obispo.**

### Oil Industry Application

**ANSWER No. 2:** It is understood that in the oil industry the calibrated receiver or displacement volume meter is made for use with light hydro-carbon liquids that are desired to be measured near saturation temperatures. For such an application in the pipeline refrigerating field, this operation would be on a branch line metering ammonia to a customer. Liquid would feed by gravity from the condenser into the vertical calibrated receiver.

Action of high level displacer of the float switch closes the condenser-receiver valve (1) and opens calibrated receiver-to-customer receiver valve (2). The calibrated volume of liquid between the displacers then flows into the lower (customer) receiver. Action of a falling level on the lower displacer closes valve (2) and opens valve (1).

In addition to a mechanical counter it would be necessary to chart the average temperature of the liquid ammonia supplied to the branch receiver in order to achieve any reasonable accuracy.–W.V.R., Chgo.

## Grape Juice Cooling

**QUESTION: Please settle a little argument for us. How many gallons of 55 F well water would be required to cool 600 gallons of grape juice per hour from 180 F to 60 F? This may appear to be one of simple mathematics but it has produced three different answers in our chapter.–D.D., Eau Claire, Mich.**

**ANSWER:** It is a little difficult to find data on the specific gravity and specific heat of grape juice. However, data on wine, sugar-water mixtures and alcohol are available. From these it was determined that reasonable values for the specific weight and specific heat of grape juice would be 1.00 and 0.92 respectively.

Since the above problem does not state the leaving water temperature, the answers worked out are for three possible leaving water temperatures. Take your choice. Maybe each of you will be satisfied:

| Leaving Water Temperature °F | Cooling Water Required, gallons |
|---|---|
| 175 | 552 |
| 165 | 602 |
| 155 | 662 |

**–R.G.R., San Lus Obispo**

## Ozone Questions Swamp Box Committee

### Can Ozone Strength Be Mechanically Metered?

**QUESTION: Is there a method for measuring ozone concentration which may be commonly used by warehouse personnel?**

**The public health authorities are getting tougher on the health aspects of ozone, and many ozonators do not produce their rated advertised capacity.**

**I am having difficulty finding a simple method. Laboratory methods are usually too complex.—H.C.D., M-at-L.**

ANSWER: Continuous recording and/or indicating type devices for measuring ozone concentrations are marketed by the Welsbach Corp. of Philadelphia, Pa. There may be other firms marketing similar equipment but this is the instrument used by the Armour Research Foundation, IIT.

**—G.M. Platt, Chicago.**

### As An Oxidizing Agent Ozone Deteriorates Rubber

**QUESTION: Rubber in a cold room door gasket was found to perish completely in a matter of weeks, and replacement gaskets suffered the same fate. The gasket manufacturer maintained that his product was of the usual standard. The cold room was installed in a butcher's shop, operating in a perfectly normal fashion at 34 to 36° F with a forced draft cooler and Sterilamp type of ultra-violet lamp. Have you had a similar experience, and can you advance any cause and remedy for this trouble? The Refrigeration Journal, Australia.**

ANSWER: The trouble is due to the ultra-violet lamp. This produces ozone, a very strong oxidizing agent which causes quick deterioration of natural rubber. The remedy lies in the use of a synthetic gasket which will withstand the oxidizing action of ozone.—**F.Dicker, Adelaide, Australia.**

### Ozone Determination By Chemical Means

**QUESTION: Do you know whether Arthur Ewell's ozone concentration determination method is still available?**

**—J.R.K., Chicago.**

ANSWER: Presumably, any one could make a kit for determination of ozone. Essentially, Professor Ewell's method depended on the saturation of filter paper strips with potassium iodide and starch solution. Similar papers had been calibrated by exposing them to known ozone concentrations. The resulting color of the oxidized paper strips was noted and a color chart was established. In this way, other strips could be exposed to ozone and the color matched against the chart.

The ozone concentrations commonly encountered by warehouse personnel are in the very low ppm range, which is extremely difficult to measure accurately by any known technique. A number of ozone meters capable of detecting ppm concentrations is under development, but to my knowledge none is yet on the market.

**—H.E.C., Phila.**

### Advertising Slogan Appears to be Paradox

**QUESTION: While discussing the use of an advertising slogan in connection with a canned carbonated beverage, I felt it necessary to obtain some clarification.**

**The slogan itself reads "Fast Cooling Aluminum Stays Cooler Longer". The slogan is in reference to comparison of other types of tin containers.**

**If the flow of heat from the beverage in an aluminum container travels fast in an outward direction, wouldn't it also travel fast in the opposite direction?**

**If the above slogan is correct, would the specific heat of aluminum be a factor in retarding the heat flow in one direction, or would the reflection of heat waves be considered the most important factor?—J.S.P., Hawaii.**

ANSWER: In the absence of any specifics, it appears that J.S.P. has correctly analyzed the problem. In both cases, the surfaces would be bright shining ones in which the emissivity for each should be very nearly the same. In calculating the heat transfer coefficient for such a condition, the conductivity of the metal is ignored because it is so thin and can have little influence on the overall coefficient. Other variables that cannot be pinned down have a greater effect.

**—J.A.H., San Luis Obispo**

**Summertime operations often bring out the worst of the refrigerating system. What operating experience proved a headache in your plant? Can the Question Box put you on the trail of a correct solution?**


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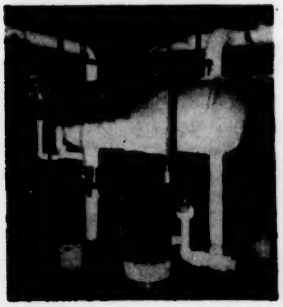

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## Oil Removal With Safety

QUESTION: More than a month ago our Chapter instructor and a couple more experienced engineers advised that I should discontinue using my refrigerant pump-down compressor as an air compressor. When I wanted to blow oil out of my coils, because of the convenient piping arrangement, I have used the pump-down compressor to produce 100 to 125 lbs. air pressure for blowing air out of the coils. The instructor and these other engineers went to great pains to point out the hazards, for which I am thankful but still a little skeptical.

In another publication the other day, I read the following: "The coils were pumped out, disconected and blown with compressed air at 125 pounds pressure to insure the complete removal of oil accumulations. Oil drains were installed and the drain pipe extended to the outside of the building."

The consulting engineer who wrote that not only enjoys a reputation of being an outstanding consultant but he is a member of the NAPRE National Educational Committee. I fail to see the difference between the practice I use and the practice he described. He apparently was getting air from another source, whereas I used my available pump-down compressor to obtain the necessary air pressure for oil removal. Can someone re-define the hazard in my operation? I seem to be missing the point.—C.P., Chicago.

## New Scientific Terms Trip Practical Engineer

QUESTION: New terminology, possibly product developments that I have spotted in news accounts or features in Industrial Refrigeration and other trade publications, uses words with which I am unfamiliar; for example, the phrase "filled epoxy resins". That name has come up in connection with the electrical field and in connection with thermal and electrical insulations, as well as compounds, including metal adhesives. What is it and why is it important to our field?

Another name is "polymer". This apparently has something to do with the field of plastics. Can you tell what connection that has with the plastics found in thermal insulation and with the plastic used for pipe and tubing?—K.C.F., D.C.

## Pakistan Reader Inquires About Eutectic Plates

QUESTION: Here in West Pakistan our method for ice cream sales is to send out hand carts. Carts have containers arranged all around and ice filled with sodium chloride added. Ice cream packets are placed between the containers. It is desired to replace this system which is quite troublesome. However, motive power for the carts is out of the question.

It may be mentioned here that another factory places metallic boxes 18 x 24 x 2 in. in their hand carts. These boxes are totally enclosed and are placed in the carts without ice. They maintain the required temperature for 24 hours and of course the ice cream doesn't melt. What do these metal containers hold? How long do they have to be placed in the main plant and at what temperature, in order to serve adequately in the hand carts when they are returned to them?

—M.A.Q., West Pakistan.

## Requests Examples, Data on Building Material Heats

QUESTION: Having had no theoretical training (college engineering) it is sometimes difficult to reason out certain practical problems requiring fundamental physics and math. Here's an example:

We had taken over some old WW II (frame) warehouses in a growing area for sorting use and as shaded depots for truck and car loading. Produce was in an over-abundance and droughts in other areas prompted canning and freezing in record breaking quantities. However, cooler storage was critical and more refrigerated transportation unavailable.

It was proposed that the old warehouses be converted for coolers, and afterward for temporary freezer storage. Adding insulations, finishes and doors in a short time was no problem, but product arrival overtook completion of the refrigeration.

### Relies On Notebook

The plant was far enough along to assure start-up in time for holding cooler temperatures. However, there was no time for pull-down nor product cooling. Through years of experience I had made tables and notes on how to calculate heat transmission through structures, and heat loads in our various products. Our plant operations proved my figures right.

But where in the world can data be found on six-inch reinforced concrete poured over insulation: on fill insulation and lumber which lay exposed in 100 F sunlight before installation and was probably not under 90 F at the time it was placed? On pipe coils and steel materials installed in 90 F ambient conditions?

### Seeks Tables or Data On Heat Content, Transmission

In other words how many Btu were contained in these construction materials, so I could figure on temporary water ice bunkers and blowers for my emergency pulldown? My guesstimates were high, but excess ice was cheap compared to carloads of rotten produce. The boss forgave me that un-used carload of water we had left over after the ice melted.

But even today, I would be estimating from this experience unless you can show me how to figure such items, and where to find tables of heats in such materials.—G.S.A., MAL

## Controlling Heat Gains With Access Air-Screen

QUESTION: This may be a question for the Reader Service Department rather than the Question Box, but here goes: Where can we get information on a recent development which is in the nature of a doorless door? This is an air screen across an open door which allows people to leave or enter at will, but prevents a loss of refrigeration through the access—R.S.W., Florida.

## Eutectic Tables Sought

QUESTION: Where can we locate a table that will show various eutectic compositions, or a list of salt solutions for use in eutectic plates which would be used for refrigeration effect at minus 10 to minus 20 F? Where can literature be obtained which would include corrosion prevention treatment for such solutions?

—B.B.C., Maracaibo, Venezuela.

## Condensing Pressures Prompt Two Queries

QUESTION: What are the effects of high condensing pressures on a refrigeration system?

What are the causes of high condensing pressures?—Q.M., NYC.

## New Questions

### Removing Oil From Aero-Sols

**QUESTION: Aero-sol propellants received via rail car at our plant are discharged to storage by pressurizing the tank car (tankers have outlets similar to refrigerant receivers). We employ a Brunner compressor, 4-cyl. Model NR-10 (V type, 3-5/8 x 2-1/2-in) W56-1 operating at approximately 420 rpm. This unit taking suction from our storage tank, discharges through an oil separator and into the tank car at from 50 to 70 spig.**

**Our problem is this: The supplier contends that we are contaminating the tank car with refrigerant oil and he is back-charging us for cleaning. Our oil separator has no name plate data on it so we do not know the particulars other than it has a 1-5/8-in. OD inlet and outlet, etc. However, we believe that the separator is probably too small or its structure is ineffective. Where can we find literature that would describe the most effective way of removing oil from the compressed aero-sols? They are mostly Refrigerant-12, and combinations of halocarbon gases involving Refrigerant-12. Is there any literature that specifies size and internal arrangements for oil separator vessels?—C.W., Chgo., Ill.**

### Adding Alcohol To A System

**QUESTION: Recently a speaker before an engineers group stated that a lubrication manufacturer recommended addition of a small amount of alcohol in an ammonia refrigeration system. Intent was to prevent formation of detrimental deposits and to keep compressor rings free. What about this practice? Can any serious consequences result chemically or physically?—R.H., Chicago.**

# BOOK REVIEWS:

## Management For Engineers

MANAGEMENT FOR ENGINEERS—$6.75
Author—Roger C. Heimer
Publisher—McGraw Hill Book Co.

▶▶▶ ENGINEERS, it is alleged, take little interest in the business management of the enterprise of which their plant is the heart. More executives have made it a point recently to interest their engineers in such economics.

Therefore, a publication on the subject of management, written specifically for the engineer, should be a seller.

Professional and practical engineers reviewing books of this nature for INDUSTRIAL REFRIGERATION had the following comments to offer on *Management For Engineers.*

"My impression of the book is favorable for the most part. Perhaps a little too much emphasis is put upon details for depreciation. The book should be an asset to the library of any large company. Supervising engineers for larger organizations will find it very useful as will plant superintendents and plant managers".—This comment from a professional engineer who was formerly supervising engineer for one of the larger multiple plant brewing establishments in North America.

"In addition to a review by our assistant chief engineer, I let our controller take a look at this book. His impression is similar to mine, that the book should be of real value to young engineers. We are very much impressed and would like to get a copy for study by our more ambitious engineers. It might be added that if the reader has not had some experience in economics he would find it slightly difficult to use for self-instruction."—VP, frozen food firm.

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All refrigerating engineers are invited to affiliate with the National Association of Practical Refrigerating Engineers, Inc., an educational association, "not-for-profit".

# *From the President's Desk*

## Executive Again Stresses Need For Training at Technical Level

Frank L. Chase

▶▶▶OVER the week-end of August 2-3 the American public learned of the launching of an inter-continental ballistic missile, the Atlas. It is hardly over a year since one of the first internationally successful activities of the International Geophysical Year took place – the orbitting of a satellite. Remember the big stampede for additional training of scientists and engineers?

Well, the big rush for science and technical training has sort of tapered off a bit. National groups, societies and associations interested in such matters are beginning to take some level headed steps toward remedying any shortages of whatever there might be, both short-term and long range.

Now is my opportunity to re-hash NAPRE's policy of the past 40 odd years and remind various refrigerating enterprises that the practical engineer should be given some consideration in the long range educational plans of the nation. In going over some old literature I ran across an article published in the New Orleans Item, Monday, June 6, 1956. It is worth passing on at this time:

"The safety and well-being of the public depends on our trained engineers, said a New Orleans engineering expert.

"Stressing the need for further training facilities, he cited courses conducted by the local National Association of Practical Refrigerating Engineers as a step in the right direction.

"The engineering expert is Prof. Arthur M. Hill, head of Tulane Department of Mechanical Engineering.[1]

"Prof. Hill said the operating engineer is particularly important in the safe and skillful operation of equipment.

"While you read this at home, on the bus, or in your place of business, the operating engineers are working for you behind the scenes.

"They are watching the water level and boilers, adjusting steam or water flow, checking temperatures and pressures in air conditioning equipment.

"Characteristics of these men are loyalty to the public, a sense of accomplishment and a desire to render even better service.

"Professor Hill had words of praises, too, for professional engineers.

"The continual service, design and experimentation to produce a better product or service are among their activities, he said.

"They all add up to a high standard of American living.

"He discussed the special way in which recognition comes to these men.

"The reward to the engineer comes not in publicity, but in the knowledge that a need has been met, and mankind has benefitted."

Another educator, Karl O. Werwath, President of Milwaukee School of Engineering, in his address at the time Milwaukee Chapter was revived three years ago, emphasized the fact that the practical engineer today has achieved the technician level. He must be trained therefore as a technician. He pointed out how NAPRE has been teaching their members courses in engineering for the past 48 years. This has been beneficial to all types of businesses whether they are hotels, office buildings, hospitals, department stores, ice, cold storage, processing, manufacturing, power or water purification plants.

Recognizing the need for broader, more technical training, NAPRE has embarked on a bold educational program guided and sponsored by a number of educators and its Industrial Members. These Industrial Members will be cited and honored once again at the annual meeting of the Association to be held in Miami November 11, 12 and 13. Both operating and manufacturing firms who are not at present supporting the NAPRE program as an Industrial Member, should plan on attendance at the annual meeting. There is no better way to satisfy themselves as to the job the Association does, than to see the program in action. All users, contractors and manufacturers of industrial refrigeration equipment are invited to attend.

*Frank L. Chase*

[1]Prof Hill is on leave of absence from Tulane and NAPRE Educational assignments, to advise on a government defense project.

## Safety Expressed As Good Housekeeping

▶▶MEMBERS-AT-LARGE are represented on the NAPRE educational committee by a practical consultant well known through the Southern states. He is C. Tom Baker of Atlanta. In addition to his consulting practice, Baker serves as Technical Editor to another refrigeration trade publication. He recently commented in his column on the partnership between good housekeeping and safety first.

"A few hours between plane and train schedules on May 13 afforded your reporter an opportunity to inspect the two large cold storage plants at Memphis, owned by a long established organization of the Mid-south. Charles A. Conley, chief engineer of these properties, which includes the Memphis Cold Storage Warehouse Co., and Alvis J. Clay, chief engineer of the second plant, Mid-South Refrigerated Warehouse Co., both prominently identified with the educational activities of NAPRE, locally and nationally, take pride in showing visiting engineers through these two modern developments.

"One of the first things that attract the attention of visitors to these two plants is the clean and orderly appearance in evidence in all departments of the operation. Clean floors, clean and well-kept machinery and accessories, and excellent natural and artificial illumination, emphasize the splendid housekeeping methods practiced in these two widely separated cold storage facilities.

**Usual Safety Features Often Overlooked**

"Probably the next impression of good operating procedure in these plants is the overall safety features that protect workmen from injury resulting from contacts with moving belts, exposed electrical equipment, or falls from roofs and platforms. The visitor does not see unguarded and unlighted stairways. Neither does he see ladders placed against a wall to afford access to condensers and cooling towers on the roof.

"Visitors are impressed, too, with the complete plant operating logs that are a must in both plants. There is no need to guess when a repair was made and the nature of the repair; it is a matter of record on the log.

"As you are being shown through these two well-operated and well-maintained properties, you think of the many plants in which good housekeeping is unknown, where the general appearance is one of confusion and lack of plan, where the operating force will tell you: 'Yes, I know it should be done, but I just haven't had time'. Over in Memphis, engineers of the two plants under discussion take time to do the things that are essential to cleanliness, good housekeeping, safety and efficiency."

**–M. E. Bell, Board Chairman NAPRE**

## New Member-at-Large Finds NAPRE Material Helpful

AUSTRAILIA—Prime object in joining NAPRE was to increase my knowledge of refrigeration. I can see at this early stage I will not be disappointed. This will acknowledge receipt of my copy of BASIC REFRIGERATION which I find very interesting and instructive. Since receiving it I have spent a lot of time in reading the various chapters.

Also, this will acknowledge receipt of my membership certificate and my first copy of INDUSTRIAL REFRIGERATION in which there are some very interesting articles, especially to us over here in Australia. I hope in the near future to be able to submit some questions for publication, or perhaps an article of interest. It is now our winter period here and we are busy with plant overhauls.

–ERIC T. WILLIAMS.

## Bell, Muller Pinch-Hit For "Veep" Mariakis

NEW ORLEANS—Louisiana's loss is Texas' gain – NAPRE Vice-President John N. Mariakis is being transferred by his firm from Claiborne Towers to the Sheraton at Dallas. Until he acquires his ten-gallon hat, side-arms and spurs, Board Chairman Mort E. Bell and National Director John G. Muller will divide his "Veep" duties including the M-at-L column.

–FRANK L. CHASE


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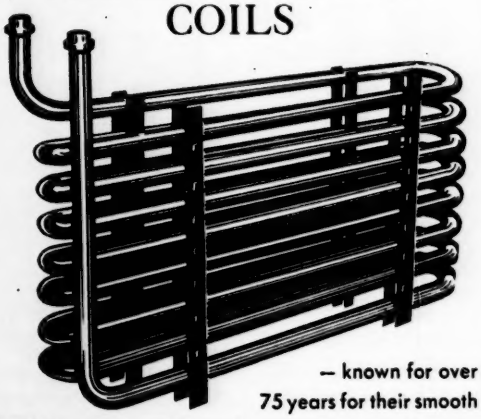

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# NAPRE Programs and Chapter Events

## Water Treatment, Humidity Washington No. 2 Topics

TACOMA—Using a test kit to illustrate the various types of treatment which can be used to meet the many water conditions experienced, Fritz Bohm of the Magnus Chemical Co. gave a very interesting talk on a treatment of water in refrigerating plants. To make certain that fresh samples were available, the speaker picked up specimens from member plants on the way to the meeting. Practical, is probably the best description that can be applied to Bohm's presentation.

Educational Chairman Bill Palmer continued the instruction on various chapters from Basic Refrigeration. The subject on humidity was reviewed by the Chairman himself, but Assistant Chairman Mort Paulson assisted by taking one chapter on compressor calculations at a subsequent meeting.

### Public Meeting Space

These were the highlights of the Spring meetings of Washington Chapter No. 2. One outstanding piece of business in the chapter was the decision to present the Tacoma Public Library with complimentary issues of INDUSTRIAL REFRIGERATION. The chapter meets in the Fireside Room of the library regularly.—JIM BENNETT

## Accessories Interest Pitt

PITTSBURGH—Recent meetings of this Western Pennsylvania Chapter have been held at the Pittsburgh Brewing Company. Accessory plant items such as lubricants, water, air and steam valves have been subjects covered by visiting speakers. Frank Foltz, Jenkins Valve Co. addressed the chapter in March. A representative of Keystone Grease Co. was present for the April gathering.

Foltz showed movies on all the various types of valves manufactured by Jenkins Valve Co., showing construction and the inner parts of valves. He elaborated on using correct valves for different jobs, and also selecting the right construction as to inner parts of the valves. He explained why this consideration is necessary with regard to the liquid, air or steam systems which they are to control.

Four members of Pittsburgh Chapter attended the charter presentation at the Southeastern Chapter, NAPRE, in Lancaster. Clyde Dalton, past president and chief engineer of Pittsburgh Brewing Co., motored over, accompanied by Secretary Otto Knoch, Edgar Kenney and Joseph Snyder.—OTTO KNOCH.

## Michigan Treats Ladies

DETROIT—George B. Bright Chapter recessed for the summer by treating the ladies of chapter members. A doubleheader program took place on June 26 following a dinner. Held at General Electric's new Home Appliance Building, the idea pleased the ladies much but at the same time made a number of them unhappy.

How did all this happen? Well, through the courtesy of Curtis-Mower, Inc., G. E. presented a discourse and demonstration of electric home appliances for the Bright Chapter ladies. Among other things for keepers of the home front was a series of "Pushbutton Kitchens" that not only appeared out of this world, but the Detroit ladies initiated a definite campaign to get rid of the old hand washboards which our NAPRE's members had previously insisted were adequate tools of the trade. As mentioned, there were a lot of sad women who went back to their own kitchens the following day.

—LEON ADAMS

## Industrial Ice Making Object of Chicago Tour

PROVISO—Last meeting of the fiscal year for Chicago Chapter, NAPRE, was held at the City Products' Proviso Yards icing plant. Serving the Northwestern Railroad, these yards are said to be among the largest in the country. Refrigeration compressors and auxiliaries are motivated by electric power produced from a locomotive type diesel electric plant. Preceding the tour, a typical American picnic lunch was served as refreshments, and election of officers for the '58-'59 year was held.

ROGER HART

New officers are: President, Roger Hart, Howe Ice Machine Co.; 1st Vice - president, Earl McMichael, Illinois Bell Telephone Co.; 2nd Vice-president, Ben Garzynski, City Products; Secretary, Bill Tiffin, Ideal Electric Co.; Recording Secy., Bill O'Reilly, Central Cold Storage Co.; Treasurer, Hubert Rancour, Central Cold Storage Co. and Sgt.-at-Arms, Jos. Laskowski, Ill. Bell Tel. The board of directors are Eugene Kelly, Nick Downes, Bert McKenna and Bill Richards.

After the election of officers, Dick Kelahan introduced Wm. East, a visitor from Australia. This gentleman is in the United States observing our meat product processes, and refrigeration and air conditioning. He told Chicago members a little about the type of refrigeration he has in his country, and compared it with ours.

Feature of the meeting at Proviso, of course, was the tour of the plant. Past National President McKenna introduced the plant manager, Lester Bausor and his chief engineer, Lester Tripp. The plant manager explained in general the operations at Proviso and turned the program over to the chief engineer for a more detailed machinery description.

Tripp explained how the plant generates its own power, highlighted the ice making process, its storage and refrigerator car icing. Following that the assembly was broken up into small groups for the tours.—WM. O'REILLY.

## Eighth California Chapter

KERN COUNTY — Delegations from California's two oldest chapters, Los Angeles (No. 2) and San Francisco (No. 1), met in Bakersfield early in the year to present a charter and initiated new members of the Bakersfield Chapter, NAPRE. The Los Angeles group which motored to Bakersfield included Past National President Regis Gubser, Larry Benedict, R. L. Maple, Edgar M. Marrs, Frank Muzzy and H. O. Smith. From San Francisco came 1956 National President Leroy Etzel and Robert McKee of Pacific Fruit Express Co.

Past President Etzel presented the charter in behalf of the National. McKee initiated the 21 new and now charter members, and Gubser installed the first officers. President of the new chapter is Victor A. Stubblefield, plant manager in Bakersfield for PFE. In view of Stubblefield's background as vice-president and as president of Los Angeles Chapter in 1957 (he resigned in September to move to Bakersfield), the members of the new chapter elected Stubblefield as its first president.

### Mayor, Honorary Member

One of Stubblefield's first official acts was to confer honorary chapter membership on Mayor A. B. Sullivan of Bakersfield, who was present to give the group an official welcome. The mayor remarked that he had had many contacts with the refrigeration industry when he served as a lubrication salesman for Standard Oil Co. and called on plants in the Bakersfield area.

Chapter officers are: President, Victor Stubblefield; Vice-President, R. E. Gilkison, PFE; Secretary-Treasurer, Leon Stanfield, Bakersfield Ice & Cold Storage Co.; Sergeant-at-Arms, Clyde E. Gross, BICS; Directors, Marion May, Union Ice Co., W. R. Greenstreet, Santa Fe RR Co. and Clyde E. Gross; and Chairman, educational committee, Phil Goetschalckx, Bakersfield Inn.

The charter presentation took place at Bakersfield Inn and was a dinner affair. However, the chapter holds its regular meetings in the Veterans Memorial Hall. Spring sessions of the chapter have been a dual program affair with basic refrigeration class preceding business meeting. Following the business meeting, there have been selected programs, not always on refrigeration topics.

### Water Conservation Program

An example of a typical Bakersfield meeting would be the March gathering at which time the California State Farm Bureau presented an educational program on the depletion of underground water resources in California. The program was augmented by a colored sound motion picture called "The Feather River Project". The increased farming by irrigation in central California has caused the water table to recede. The central valley irrigation project involves Feather River water, the master plan for replacing water previously taken from wells.

—FRED HERR AND LEON STANFIELD.

## Richard Wiskeman, Pres. Convention Chapter Dies

NORTH MIAMI—Death took Richard Wiskeman, North Miami, Fla., President of Greater Dade County Chapter, NAPRE, on July 16, at his home 14200 N.E. 16th Ave. Wiskeman had been chief engineer, Monte Carlo Hotel Inn, Miami Beach, and was elected president of the chapter early last Fall.

Shortly thereafter his chapter delegates at the national convention successfully campaigned for the 58th Convention to be held at the Kenilworth Hotel, Miami Beach. Wiskeman was taken ill in the interim and when he was to be installed as president of the chapter in January, he had been confined to his home. A special meeting was held in his home at which Mayor Thomas Sasso of North Miami, a member, acted as master of ceremonies.

### Featured in Public Press

Wiskeman was fully informed of the malignancy which was the cause of his death. In a feature article in the Miami Herald in April in which his philosophy of life was reported, he concluded the interview with the reporter with the observation, "I'm busy with plans for our convention. I am president of the local chapter of the National Association of Practical Refrigerating Engineers, meeting here in November. I want to be sure all arrangements are made".

—C. W. MONEYPENNY

### Other Units Lose Members— Tennessee Misses Carter

MEMPHIS—Secretary of Tennessee Chapter No. 1, Charles A. Conley, reported that LeRoy Carter, member, had passed away on July 19. He had died in his bed at home. Conley eulogized him as follows: "He was the most perfect mechanic I have ever known. Being my maintenance engineer for 35 years, I had good reason to know and appreciate his ability. He was a good carpenter, the best insulation applicator, an electrician and excellent solderer. He could even be a sign painter or what not as the occasion might demand.

"He called himself retired", Conley continued, "having bought a little farm upstate. He still worked at our plant when he wanted to. Carter was 65 last December and had just begun to draw his social security. A lot of maintenance ideas and work in the Memphis Cold Storage Warehouse Co. plant and in the new Mid-South Refrigerated Warehouse were Carter's ideas and labor. He was buried in Memorial Park Cemetery, Memphis."—C. A. CONLEY

### Louisiana Chapter No. 2 Loses Member in Death

NEW ORLEANS—Eugene Vandrell, maintenance engineer, The Times-Picayunne Publishing Co., passed away on June 30. Vandrell was enroute to his home when his car went out of control and struck several residences. An autopsy showed that death occurred from a heart attack. The survivors include his mother, two children and two sisters

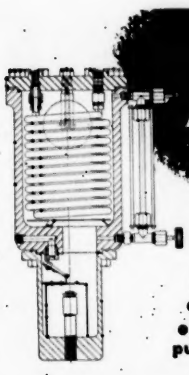
—EUGENE ORTH

### Detroit Loses Backer In Death of Founder's Wife

Many NAPRE members will be saddened to learn of the passing of Mrs. Elizabeth G. Bright, widow of the late George B. Bright. Mrs. Bright passed away in March at Coral Gables, Florida. She was buried at Woodlawn Mausoleum. She is survived by two daughters, a son a sister and two grandchildren. Bright was founder and long time backer of the Detroit Chapter, NAPRE, which now bears his name.—R. T. BURNS

## Alco Valve Presentation At Northern Wisconsin

GREEN BAY—Harvey Wishart and the program committee came up with a program which made big hits at Spring meetings. Among the features was speaker Dick Meyers, Alco Valve Co., who gave a talk and showed a film on thermostatic expansion valves. The program was held in conjunction with refrigeration classes that this NAPRE chapter holds at the Green Bay Vocational school. A social wound up the Spring meetings of Green Bay Chapter, leaving all hands favorably inclined to re-opening of activities in the Fall.—JIM SCHOUTEN.

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Armstrong forged steel purgers with automatic air and non-condensible gas discharge relieve engineers of guessing as to when the system is completely purged. Unit allows only non-condensibles to escape, saves on refrigerant.

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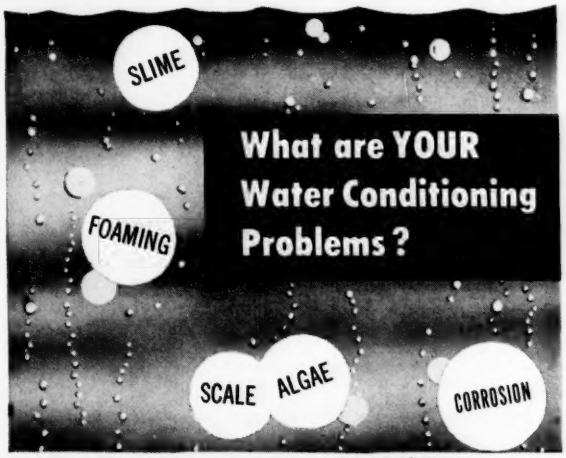


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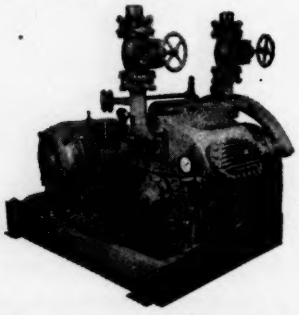

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## So. Calif Entertains Its Old-Timers With An Assist From "Eastside"

Los Angeles—Annual Old Timers Night meeting at Los Angeles Chapter, NAPRE, drew its usual record attendance on the night of May 7. Members who have been affiliated with NAPRE for a quarter century or more were accorded special honors in ceremonies conducted by President Mike Julius and Master of Ceremonies William B. O'Connor. Chapter officers reported that they learned a valuable lesson in timing by holding the Old Timers meeting early in May. A considerably larger attendance was attracted than in former years in June, when vacation absentees cut attendance substantially.

Held in the famous Mission Room of the Pabst Brewery, 1920 North Main Street, Los Angeles, Hosts for the evening were R. M. Sommer, plant engineer, Paul Piper, Pabst project engineer, and E. F. Dillon, operating engineer. Present also as associate host was P. J. "Joe" Buller (Retired), former chief engineer for the brewery and a past-president of Los Angeles Chapter.

### Expansion Program Completed

NAPRE visitors were amazed at the expansion and changes that have taken place in the brewing plant, formerly known as the Los Angeles Brewing Co. since Los Angeles Chapter last held a meeting there during Mortimer E. Bell's tenure as chief engineer in the 1940's. Since being taken over by the Pabst Brewing Co. in June, 1948, the old Los Angeles "Eastside" brewery has undergone a $15,000,000 modernization. Completion of the program in 1953 reportedly marked a milestone in the brewing industry.

While the NAPRE visitors were taken on no formal tour of the brewery and its refrigeration and cooling facilities, members of the Pabst engineering staff were not backward in dispensing a few interesting facts during the social and dinner periods. They advised, for instance, that Pabst holds many "firsts" in the brewing industry: First brewer in America to use lager beer yeast, which allegedly changed the entire character of American beer flavor; first to use artificial refrigeration; first to bottle beer directly from storage by pipeline; first to sterilize the air; first to preserve beer without addition of preservatives; first to use natural carbonation; and first, in this reporter's opinion, in real old-fashioned hospitality to visitors.

### Oldest-Newest Members Cited

The beautiful Mission Room, whose walls are adorned with colorful frescos of famous California missions at Santa Barbara, Carmel, San Diego and San Juan Capistrano, was the setting for an evening of NAPRE reminiscence and sociability. President Mike Julius held business to a minimum, confining this phase of initiation of three new members. One of these present, William J. Bower, U. S. Growers & Shippers, subsequently was photographed as the "youngest NAPRE member" present (he had been a member exactly 20 minutes). Ralph E. Manns, president, Ralph E. Manns Co., Wilmington, Calif., was adjudged the oldest member present in terms of continuous membership. He joined NAPRE in 1920.

Other old timers who were introduced by Emcee O'Connor included E. T. Quinn, Herbert E. Royden, Frank Elliott and W. R. Burnett, all of whom joined in 1925; Donald Byl and L. M. Andrews, 1928, R. L. Maples, 1931; Regis Gubser, 1932; Ralph M. Moore, 1938, and Frank Eccleston, 1939.

J. L. Buller and Tom Sherwin, both chapter past presidents and both now retired from work, were among the honored guests who seemed to enjoy hugely renewing old acquaintanceships. Present also was Mortimer E. Bell, NAPRE's National Board Chairman, a two-term past-president of Los Angeles Chapter (1943 and 1946) a member of Seattle, Wash. Chapter and head of the Washington Educational Committee. (Bell has since returned to Southern California and is resuming activity with Los Angeles Chapter; he opened a consulting practice there).

### Barber-Shop Quartetting

Festivities began with a social hour during which NAPRE members and guests were given an opportunity to sample the Pabst Brewing Co. product, and, in the course of which, the former Pabst slogan, "What'll you have"? precipitated but one response—"Pabst Blue Ribbon". Miss June Lynn, the charming blonde accordianist who has helped make various past NAPRE parties more delightful, entertained with a liberal repertoire of modern and old time songs and request numbers.

Notable among those grouped around her at various times, singing or giving a fair facsimile of vocalizing, were such well known NAPRE personalities as W. R. Burnett, who really can go to town on the "Beer Barrel Polka"; Harold A. Halls of the Recold Corp., who revealed a remarkably good baritone voice in "A Long, Long Trail A-Winding"; Frank Eccleston, who is nearly, but not quite, as good a singer as he is a golfer; Guy R. King Mike Julius, Phil DeSantis, Frank G. Muzzy, and even that dignified gentleman of refrigeration, Ralph E. Manns, joined whole-heartedly in the chorus of "It's a Long Way to Tipperary". George Paulick, a national officer, was so busy taking pictures that he had no time to join in the vocalizing.

O'Connor and Ernest C. Hammersmith arranged for the tasty ham dinner and also functioned as waiters. So busy was O'Connor that later in the evening, when he was called on to pinch-hit for Ed. L. Nelson as master-of-ceremonies, he appeared before the microphone still wearing the household apron he had used during his K.P. Several Walt Disney films, rounded out the evening's program.—Fred Herr.

# COMING CONVENTIONS

**AMERICAN MEAT INSTITUTE**
Sept. 26-30, 1958
Palmer House, Chicago

**CANADIAN ASSOCIATION OF ICE INDUSTRIES**
October 6, 7, 8, 1958
The Chantecler, Ste. Adele, Quebec

**REFRIGERATION & AIR CONDITIONING CONTRACTORS ASSN.**
October 12-15, 1958
Broadmoor Hotel
Colorado Springs, Colo.

**NATIONAL SAFETY COUNCIL**
October 20-24, 1958
Chicago, Illinois

**AIR CONDITIONING AND REFRIGERATION WHOLESALERS**
October 22-24, 1958
Sheraton-Palace Hotel, San Francisco

**NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS**
October 23-25, 1958
St. Francis Hotel, San Francisco, Calif.

**NATIONAL FROZEN FOOD DISTRIBUTORS ASSN.**
October 26 to 29, 1958
Statler Hotel, New York City

**NATIONAL ELECTRICAL MANUFACTURERS ASSN.**
November 10-14, 1958
Traymore Hotel, Atlantic City, N. J.

**NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS**
November 11-13, 1958
Kenilworth Hotel, Bal Harbour, Fla.

**NATIONAL COMMERCIAL REFRIGERATOR SALES ASSN.**
November 17-19, 1958
Golden Gate Hotel, Miami Beach.

**NATIONAL ASSOCIATION OF ICE INDUSTRIES**
November 18-21, 1958
Biscayne Terrace and Everglades Hotel, Miami Beach, Fla.

**AMERICAN SOCIETY OF REFRIGERATING ENGINEERS**
December 1-3, 1958
Roosevelt Hotel, New Orleans.

**NATIONAL WARM AIR HEATING AND AIR COND. ASSN.**
December 1-4, 1958
Cleveland, Ohio

**NATIONAL EXPOSITION OF POWER AND MECHANICAL ENGINEERING**
December 1-5, 1958
New York Coliseum, New York, N.Y.

**DAIRY & ICE CREAM INDUSTRY EXPOSITION**
December 7-13, 1958
Navy Pier, Chicago, Ill.

**INTERNATIONAL ASSOCIATION OF ICE CREAM MANUFACTURERS**
**NATIONAL ASSOCIATION OF RETAIL ICE CREAM MANUFACTURERS**
Conrad Hilton Hotel, Chicago, Ill.

**DAIRY INDUSTRIES SUPPLY ASSOCIATION**
Congress Hotel, Chicago, Ill.

**MILK INDUSTRY FOUNDATION**
Hotel Sherman, Chicago, Ill.

**INTERNATIONAL HEATING AND AIR CONDITIONING EXPOSITION**
January 26-29, 1959
Convention Hall, Philadelphia

**AMERICAN SOCIETY OF HEATING AND AIR-COND. ENGRS.**
January 26-30, 1959
Philadelphia, Pa.

**INSTITUTE OF AMERICAN POULTRY INDUSTRIES**
February 13 to 15, 1959
Municipal Auditorium, Kansas City, Mo.

**THE REFRIGERATION RESEARCH FOUNDATION**
April 2-5, 1959
Statler and Mayflower Hotels, Washington, D.C.

**NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES**
April 5-9, 1959
Statler and Mayflower Hotels
Washington, D.C.

**EDISON ELECTRIC INSTITUTE**
April 5-9, 1959
New Orleans, La.

**NATIONAL INDEPENDENT MEAT PACKERS ASSOCIATION**
April 16-19, 1959
Palmer House, Chicago

***WHY GAMBLE*** with your refrigeration dollars? When the chips are down you can be sure that Howe equipment will pay off. Howe compressor wheels become your Fortune Wheels as they *keep spinning* to maintain products at profit-peak while holding costs down. Cash in now on Howe experience and equipment.

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## Smaller Ice Cubes Suggested By Merchandiser

▶▶▶ PROCESSED ICE without a doubt has been a sustaining activity of commercial ice plants. Well aware of this fact, local groups, state associations and in some cases regional affiliations of ice manufacturers, have concentrated on a sales program for processed ice. Radio programs in the Chicago area and TV commercials in other cities are evidence of that objective.

However, inquiries received by manufacturers and INDUSTRIAL REFRIGERATION magazine indicate that colder harder ice cubes have not entirely satisfied the buying public. On page 4 of the July issue of INDUSTRIAL REFRIGERATION there was an announcement which read "Another Ice Cuber Marketed". This is the article that stimulated recent correspondence.

Typical of letters received, was the following: "We thought that you might possibly know of the type of cuber that would meet our needs. Like all ice plants, we have met competition from the on-premises cubers, and frankly some of them make a better looking product than we can make. Of course iceman's ice lasts longer, but we have found that due to the exposure to cubes, many of our customers are starting to ask for cubes. They seem less interested in the quality than the appearance.

"What we would like to locate is a cuber that would make in sufficient quantity a product comparable to that made by a popular make commercial cuber. A cuber which could utilize our present refrigerating compressors.

"Being a small plant, the only way we can justify the expenditure for a cuber is to have an arrangement whereby we can eliminate the processing of ice and thereby one part-time employee. Of course we would have to crush some ice, but the cubes would be vended, and would, in most cases substitute for crushed ice."

More comments read along this line: "Our problem is, I think, common to the ice industry. It seems as if most sales are for processed ice, and it just does not make sense to make ice in one form and then have to convert it to another. In addition, the on-the-premises cubers have educated people to those cubes.

"We have made cubes and attempted to sell them not over ten short years ago, and people just did not want them. Now cubes are accepted and requested. Our experience indicates that people are not interested in the large size cubes such as mechanically processed ice devices make, but rather smaller type cubes such as a popular self-contained cuber makes.

"Such a size would allow for a little shrinkage and still provide a longer lasting cube. At the same time it would be a size which would fit into glasses with minimum trouble."

## Blatz Goes to Pabst In Current Brew Moves

▶▶▶ PABST Brewing Company announced in Chicago in July that arrangements have been made for the purchase of Blatz Brewing Company from Schenley Industries, Inc. Both Pabst and Blatz will continue to be produced as separate brands, Harris Perlstein chairman and president of Pabst said. The two brands will compliment one another he said. James C. Windham, president of Blatz will become president of the combined firm, while Perlstein will continue as chairman. Combined sales of the two companies will give Pabst sales of more than 4 million barrels a year, according to Perlstein. Blatz is produced in Milwaukee while Pabst has breweries in Los Angeles, Newark and Peoria.

### Other Brewery Purchases

Six months ago another of the larger U. S. brewing firms announced the acquisition of an American Brewing Company plant, the Regal beer plant at Miami, Fla. Anheuser-Busch acquired the assets and inventory of that installation from the City Products Corp., Chicago.

At that time it was announced by August A. Busch, Jr., President, Anheuser-Busch, Inc., that the Miami plant would continue to make Regal beer under the same general management, producing about 234,000 barrels. Busch indicated that the Miami plant was acquired to expand the Anheuser-Busch popular price market.

### New Breweries

The Jos. Schlitz Brewing Co., Milwaukee has under construction, a new brewery at Tampa, Fla., started in Spring '57.

Late in 1957 Anheuser-Busch broke ground for a new Budweiser brewery in Tampa. The firm which operates breweries in Newark, N.J. and Los Angeles, Calif., also owns approximately 160 acres in New Orleans, a future brewery site. Anheuser-Busch, Inc., of course, continues its headquarters and main plant (original, plus) at St. Louis, Mo.

### Brewery Sales

Meanwhile, Fort Pitt Brewery is offering its Sharpsburg (Pa.) plant for sale (see page 39). Other breweries in New Jersey, New York and Cinn., Ohio, are offering used equipment, indicating recent modernization.

Sale of the Miami brewery by City Products leaves another Regal plant under American Brewing Company in New Orleans. William J. Sinek, City Products Chairman, said at the time of the Miami sale, that the New Orleans plant would continue to manufacture and distribute Regal beer. City Products also operates the Pilsener Brewery at Cleveland.


**K. G. BROWN INTRODUCES THE NEW MULTI SCREW VENDOR FOR 1958**

- An increased capacity of 40% over previous models.
- Multi Single Line Vending of any size package or block, regardless of the type of tie.
- These new vendors are now made in lengths up to 20' which will vend 268 10# bags plus 132-25# blocks out of the same delivery door, (400 Sales).
- Up to 5 various sizes of blocks or bags can be vended from this one vendor.
- Radical invention, trouble free, more storage space by design, lower operational cost.

NEW LOW COST 6' x 8' station vends 110-10# packages, or the "Junior", 3' x 7' station vends 90-10# packages using the new multi screw vendor.

ILLUSTRATED
9' x 16' Station vends 168-10# bags and 86-25# block.

K. G. BROWN MFG. CO., INC., MATTITUCK, N. Y.

# WHAT'S NEW, *Continued*

## Heat Exchanger Equipment Transportation Units Make News

▶▶▶ EVIDENCE of an upturn in the Nation's economy is reflected somewhat in the industrial refrigeration and air conditioning equipment being offered. Virtually a snow storm of press releases are reaching trade publications, offering new products such as compact series of evaporative condensers. Another manufacturer for the industrial field expands the line to 16 sizes, and still another well known exchanger line introduces a waste heat reclaimer for accessory applications around refrigerating plants. When the regular lines slow down the sales department starts looking for added business in the auxiliaries.

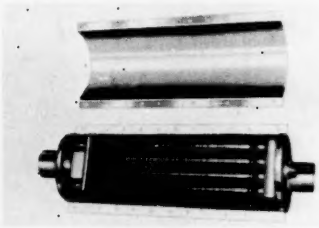
### Adds to Line of Evaporative Units

▶ SIXTEEN SIZES up to 300 tons capacity, have been announced by Imeco, Inc., manufacturers of evaporative condensers. Ruggedly constructed, the unit is designed on a blow-through principle, the fan being thus removed from evaporating water vapors. All parts are readily accessible. Eliminators are made in sections readily removable from the top which exposes the spray assembly for convenient servicing. Desuperheater coils are optional equipment.

### Compact Condenser

▶ RECOLD introduced in July a new compact DF-A series of evaporative condensers. Retaining patented features of the Dri-Fan line, the new unit is nominally rated through 190 tons for ammonia and 230 tons for halocarbon refrigerants. The condenser can be completely disassembled and reassembled on a job, but it is designed to be transported by truck in one piece. Modulating dampers and spray section access doors are optional equipment.

### Coil Maker Adds Waste Heat Reclaimer



▶ APPLICATION of heating grids or coils for sub-floor structure in low temperature storages is becoming more popular in the prevention of floor heaving. The problem of reclaiming heat from various waste sources is simplified by a new type of heat exchanger of finned tube construction made by Rempe Co. Unit is ideal for reclaiming heat from exhaust steam, exhaust gas or other waste heat sources. It is available in a variety of metals suitable for temperatures up to 1500 F, and can be furnished with split-shell as shown, or closed internal combustion engine exhaust waste can be converted for additional heat in reverse cycle systems.

### Standard Condensing Units Converted For Trucks

▶ SUITABLE FOR application on present plug-in, hold-over type systems, Dole Refrigerating Company is offering their new Lektro-Cel Generator Kit. The conversion unit is designed to operate standard hermetic, semi-hermetic and open type condensing units as over-the-road refrigeration systems. The generator is mounted on the truck engine and supplies single- or three-phase current to the condensing unit. The generator may also supply power for heating the truck body in winter operation.

The firm will soon introduce a complete over-the-road truck refrigeration system using the Lektro-Cel. Standard electric refrigeration circuits will be used, enabling the equipment to be installed and serviced by any competent refrigeration mechanic.

### Truck-Mounted Car-Icer

▶ BUNKER ICING operations are said to be accomplished in less time and with greater convenience through the use of a truck-mounted car-icer. This portable, self-propelled perishable cargo icer now operating in railroad yards in California, was introduced by The Conveyor Company.

The mobile rig travels under its own normal traffic speeds to the cars or bunkers requiring icing. The bunkers are iced at a speed of approximately twenty 300-lb. blocks per minute.


**DIMCO CAST ALUMINUM FIN EVAPORATING COIL**

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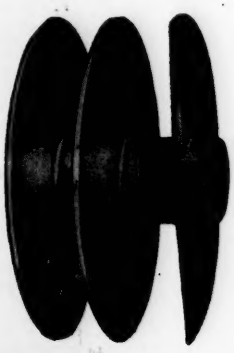

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the tougher the job, the better our expert metal-workers like it. With their modern equipment, they produce the finest work to your precise specifications. In any metal, even stainless steel, or up to 6-inch extra heavy. For fast, quality bends, backed by nearly 40 years specialization, call on us! May we quote on your next job?

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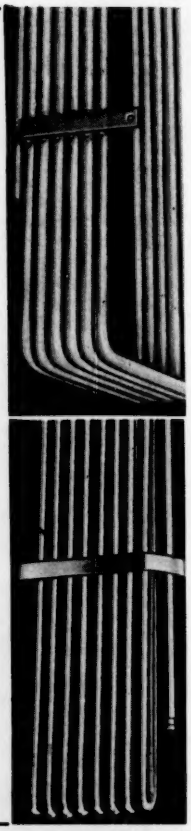

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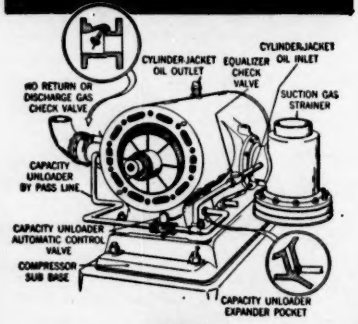
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1405 N. Duke St., York, Pa.
Qualified distributors in principal cities
LOW TEMPERATURE FREEZING EQUIPMENT

# Personnel Changes About The Industry

## Diehl, Woodruff Made ASRE Fellows

▶▶HONORED at the 54th Annual Meeting, ASRE, Twin Cities, June, were Dr. H. C. Diehl, Director, TRRF and Dr. J. G. Woodruff, University of Georgia Experiment Station. Titles of Fellow-Member were conferred on Diehl and Woodruff. Other ASRE members who were made Fellows at that time included Dr. W. O. Walker, Director of Industrial Chemistry Research, University of Miami, and Justin Neuhoff, General Electric Company, Bloomfield, N. J.

## New Assignments for Schurman and Briley, York Corporation

▶▶Christian J. Schurman has been appointed as General Sales Manager, Engineered Machinery Division of York Corporation, Subsidiary of Borg-Warner. Mr. Schurman whose headquarters will be in York, Pa., will direct the sale of all engineered York air conditioning and refrigerating equipment in this country.

George C. Briley has been named District Manager of the Southwest District. Mr. Briley will be responsible for the sale of York engineered air conditioning and refrigeration products in Texas, Louisiana, New Mexico, and part of Mississippi.

A member of the York Corporation organization since 1949, Mr. Briley served as office engineer and sales engineer in York's Houston, Texas office until 1956 at which time he was appointed manager of the Rochester branch, which position he held until this time.

## Ashenbrenner Promoted

▶▶ELECTED president of the Great Lakes Terminal Warehouse Co. this past Spring is L. M. Ashenbrenner. A member of TRRF, he is a past governor of that Foundation. Prior to his election he had been general manager of the firm for a number of years.

## Dalton Heads Rayon Group

▶▶ELECTED president of the American Rayon Institute, Inc., 350 Fifth Avenue, New York 1, N. Y., is William Dalton, it was announced August 5, by Hayden B. Kline, chairman of the board of directors.

William Dalton, President
American Rayon Institute, Inc.

Dalton has been executive vice-president of the National Association of Refrigerated Warehouses, Inc. for the past ten years and general secretary of the American Warehousemen's Association in Washington, D. C. Prior to these affiliations "Bill" served as both a regional and national executive of the National Association of Manufacturers.

The American Rayon Institute, Inc., was organized in 1953 to promote a wider public, trade and industrial understanding and use of rayon through a continuing program of public and trade relations.

## Fisheries Division FAO

▶▶RETURNING from a mission to Pakistan on behalf of the Food and Agricultural Organization, United Nations, is Gerald B. Talbot, Chief of the Middle Atlantic Fishery Investigations at the Fishery Research Laboratory, Beaufort, N.C.

Dr. Ernest Hess, eminent Canadian fisheries technologist, has been selected Fisheries Advisor to the Federation of the West Indies. He takes up his duties in September.

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**CONSULTING ENGINEERS**

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ENGINEERING SURVEYS, APPRAISALS, COST STUDIES,
COMPLETE ENGINEERING DESIGNS FOR TEMPERATURE AND HUMIDITY CONTROL.

**11 PARK PLACE** **NEW YORK 7, N.Y.**

# Deaths of Industry Persons

## Pioneer Meat Packer Dies

FOUNDER and Board Chairman of Wilson & Co., Thomas E. Wilson, died August 4 at his farm near Waukegan, Illinois. Wilson was also one of the organizers of the American Meat Institute, National Livestock Meat Board, and a prominent backer of the National 4-H Clubs. During World War II he helped organize fat salvage campaign for which he was awarded a medal of merit by the President in 1946.

Native of London, Ontario, Wilson came to Chicago at the age of 9 and attended elementary and high schools there. At 19 years of age he quit his job with the C.B. & Q. Railroad to join Morris & Company, meat packing firm. He became president of the latter company in 1913 but left it in 1916 to become president of Sulzberger & Sons, Wilson & Company's predecessors. He had been chairman of the Board of Wilson & Company since 1934.

## John F. Hoff

JOHN F. HOFF, a founder of the Random Ice Co., Milwaukee, died July 31, at the Columbia hospital. Member of an early Milwaukee family, he with his father and two brothers established the ice firm more than 50 years ago. In addition to his Random Ice interest, Hoff was vice president of the National Ice & Coal Co., and vice president of the Everpure Ice & Coal Co. He is survived by three sisters and two brothers.

## Rowland H. Lock

ROWLAND H. LOCK, Toronto, Canada, president and general manager of J. H. Lock & Sons, Ltd., Canadian distributors of Frick Co. refrigerating equipment, died on July 15. The Lock organization is well known across Canada and has specialized in brewery refrigeration.

## Sobocinski Dies at 86

ALDERMAN of Cudahy, Wisconsin for many years, Valentine Sobocinski, 86, died July 31, at the Trinity Memorial Hospital there. A retired foreman of the Freezer Department, Cudahy Bros. Co., he was there for 47 years.

## Roderick R. Sinclair

MANAGING director of J. Wildridge & Sinclair Pty., Ltd., Roderick R. Sinclair, Sidney, Australia, passed away early in May. Death was attributed to a heart attack. Sinclair passed away a week prior to his appearance at the First Australian Refrigeration and Air Conditioning Convention and Exposition at which he was to read a paper with Dr. Rudolph Plank of Germany and E. W. Hicks. Besides being a member of the Australian Institute of Refrigeration, he was a member of the Institution of Engineers and the National Association of Practical Refrigerating Engineers. He is survived by his wife and a son.

# Classified Advertising

**All classified advertisements are payable in advance. Except for Positions and Help Wanted classifications, this section is reserved exclusively for USED equipment.**

**RATES: 20c per word; minimum 25 words. $2.00 per line for bold face headings: $15.00 per inch for line listings.**

### Position and Help Wanted

**WANTED** — Refrigeration Service and Installation superintendent with "Freon" and ammonia refrigerant experience, for air-conditioning and refrigeration systems. Location, Pittsburgh area. Write Box SP-3, % Industrial Refrigeration.

### Ice Plants For Sale

**FOR SALE** — Being forced to retire from this business, am offering my 35 ton ice and cold storage plant for sale, at a bargain. Located in Midwestern county seat, population 10,000; no competition. Oil field and tourist trade; plant now in operation. Write T. V. Woodward, Anadarko Ice & Cold Storage, Anadarko, Okla.

### USED EQUIPMENT—wanted & for sale

**FOR SALE** — 4x4 York with motor on base, $250.00. 8x8 York. $300.00. 3 ton ammonia blower $35.00. Write E. Niebling, 1546 St. Clair, Mt. Healthy, Cincinnati 31, Ohio.

**FOR SALE** — Refrigeration equipment; ice equipment; new, used. Advise us your needs. Use "QUICKSEAL" — stops brine tank leaks; easy, efficient, economical. Born Company, 80 East Jackson Boulevard, Chicago 4, Illinois. WAbash 2-3299

Wanted — 9x9 or 10x10 Frick ice machine with motor and controls and condenser, all in good condition. Reply to:
EASTERN BREWING CORPORATION
334 N. Washington St. Hammonton, N.J.

**FOR SALE**—15 x 10 Frick booster ammonia compressor with 60 h.p. motor. Good condition. Bargain; f.o.b. Illinois. Born Company, 80 East Jackson Blvd., Chicago 4, Ill. WAbash 2-3299.

**FOR SALE** — 1000 — 400 pound ice cans $2.00 each. Uline scoring machine $300.00. Gifford-Wood scoring machine $200.00. Complete dump with chain conveyor $300.00. Gordon Equipment Co., 6530 W. Jeffereson Ave., Detroit 17, Mich.

**RED TOP BREWERY — CINCINNATI**
For Sale, all equipment including Frick 9x9 ammonia compressor with G. E. 60 h.p. 220/440 volt, 3 phase, AC motor; 2 York 100 ton each evaporative condensers; 2 Vilter evaporative condensers; Carrier cold air diffusers, etc. Inspection invited, or write to Red Top Brewery, 242 West McMicken Ave., Cincinnati, Ohio.

**FOR SALE**
9x9 duplex York compressor 200 h.p.
10x10 York compressor 100 h.p. motor.
7½ x 7½ York compressor, 6x6 York.
(2) 8x6 York booster compressors.
4 cylinder 3½x3½ Baker self-contained.
9 cyl. & 6 cyl. Frick "ECLIPSE" compressors.
100-50-25 h.p. 1200 r.p.m. motors.
JOHN F. CARSON
A & Venango Sts., Philadelphia 34, Pa.
GArfield 6-2221

**FOR SALE — FORT PITT BREWERY, PITTSBURGH**
Complete plant for sale, including 3 Frick 160 ton each evaporative condensers, installed new 1955; Vilter 10½x10½, 2-cylinder ammonia compressor with Westinghouse 125 h.p. 60/220, 3 phase, 275 r.p.m. motor, panelboard controlls, all condensers, receivers, ammonia pipe, room blowers, valves, fittings, everything erected as last used in November. Write for free 16-page, 2 color illustrated catalog to Fort Pitt Brewery, Sharpsburg, Pa. Telephone STerling 1-2300.

**FOR QUICK SALE**
Complete Worthington refrigeration system, capable 1700 ton, very fine condition, value new over $750,000, priced now under $200,000. Located Middle West. Pictures, details available. Inspection possible. Born Company, 80 East Jackson Boulevard, Chicago 4, Illinois. WAbash 2-3299

**STEIN BREWERY EQUIPMENT FOR SALE**
Included are 1950 Frick 11x10 compressor; Frick 10x10; 7x10; four "Niagara" evaporative condensers, 60 ton capacity each, ASME code stamped receiver; thousands of feet of galvanized piping, or better yet — inspect at Geo. F. Stein Brewery, Broadway at Smith St., Buffalo, N.Y.

**FOR SALE — SEE IN OPERATION**
Complete cold storage engine room ammonia equipment including Frick 11½ x 8 — D.C. to 60 h.p., 400 r.p.m. Worthington 7 x 7 D.C. to 50 h.p., 400 r.p.m. Worthington horizontal high-low duplex d.c. to 100 h.p., 225 r.p.m. Vilter 10½ x 10½ belt drive by 100 h.p., 1750 r.p.m. Vilter 9½ x 7 belt drive by 30 h.p., 1200 r.p.m. All force feed lubricated; motors 220 volt 3 phase. MG sets, starters, panels spare parts included.
CENTRAL WAREHOUSE COMPANY
739 Pillsbury Ave. St. Paul, Minn.
Phone: MIdway 6-2831

**WANTED** — Four late model 10x10 or equivalent ammonia compressors, either Frick, York, Vilter or any other popular make, with 220/440 volt synchronous motors, starters, exciters. Our buyers would like to inspect this equipment as erected and are willing to pay a fair market price for late model equipment in guaranteed condition for immediate delivery. Please give complete details in first letter, including serial number, model, location, asking price "as is" or preferably f.o.b. truck and other pertinent data; we will also consider vertical or horizontal condensers or preferably evaporative condensers of equivalent capacity for immediate delivery. Write to Box SP-6, % Industrial Refrigeration.

**QUICK RESULTS**
**with**
**Classified Ads**

**not a plaster**
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**...it's a**
**NEW**
**CONCEPT**
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**wall finishes**
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• It's not a plaster . . . not a paint. Swift's Adcote wall finish was especially developed to provide industrial users with a high moisture resistant finish that is easy to apply yet has good adhesion to many different surfaces and presents a clean, white, uniform appearance.

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Adcote finished walls are fire retardant and fully washable. Adcote is supplied as a dry powder and a liquid which are mixed together prior to use. Though usually trowelled on, spray or brush can be used.

A trial in your own plant is the best way to prove the superiority of this new Swift concept in wall finishes. Return the coupon for details on a trial order today.

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The refrigeration industry again finds Kramer blazing a new path with its THERMOBANK SYSTEM—the original and only automatic re-evaporating, non-overloading, fastest hot gas defrost system—now engineered to perform unfailingly, not only in a heated space but in any unheated space or outside at any outdoor temperature.

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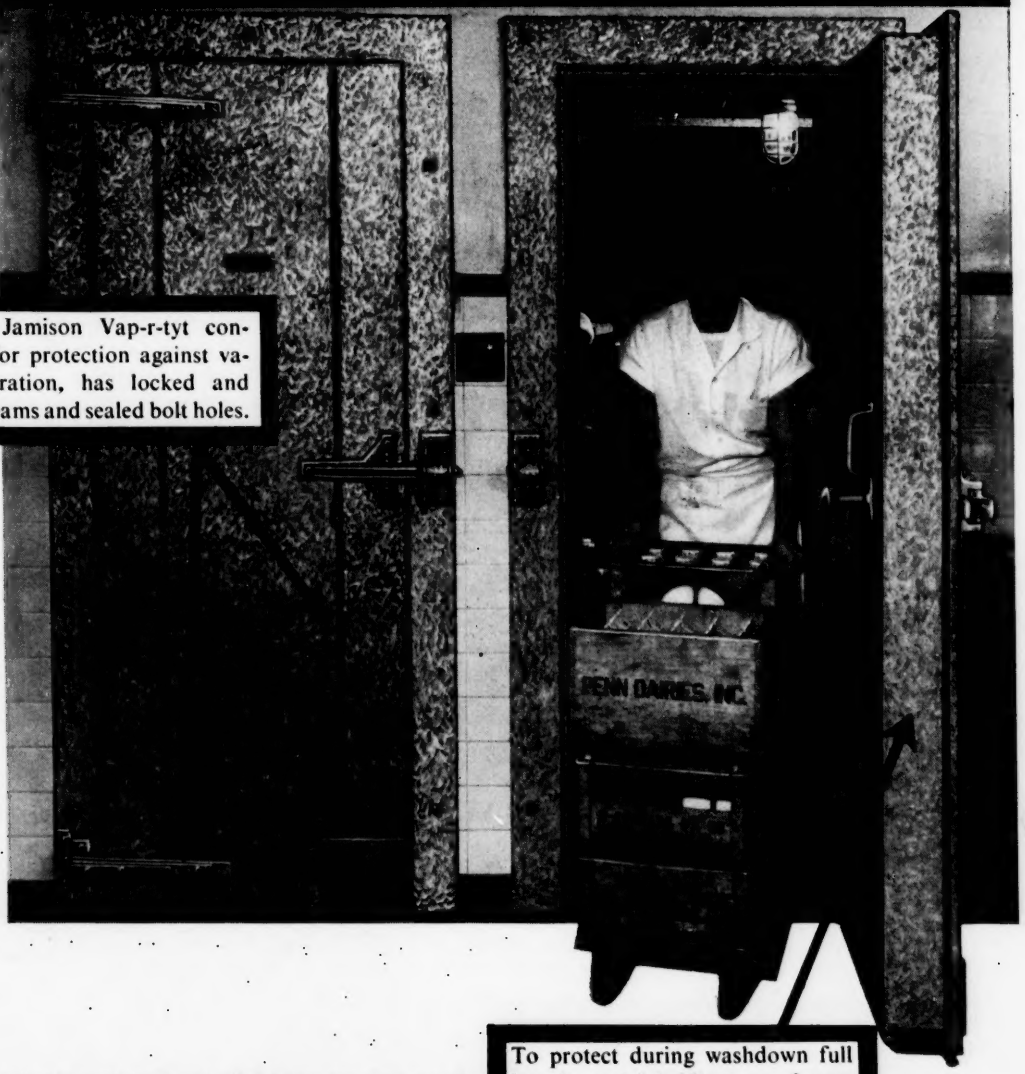
**KRAMER TRENTON CO. Trenton 5, N. J.**

*45 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER*

# Jamison booted VAP-R-TYT* metal clad door protects against wet floors, frequent washdowns, high humidity



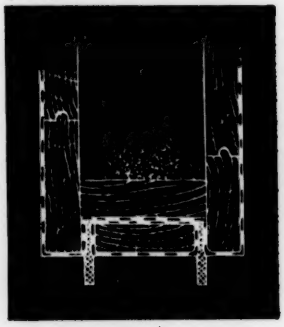

Exclusive Jamison Vap-r-tyt construction for protection against vapor penetration, has locked and soldered seams and sealed bolt holes.

To protect during washdown full length metalcladding on frame, front and back of door.

For protection during washdown and when floors are wet a metal boot is formed by applying wrap around metal with locked and soldered seams to all sides and bottom including concealed surfaces.

*(frame)*

*(door)*



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